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PSYCHIATRIC CASUALTIES AS A REPATRIATION PROBLEM.

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In an approach to the problem of the psychiatric casualty, we have the considerable experience of the war of 1914-1918 to assist and warn us. An analysis of the figures has indicated the magnitude of the repatriation problem presented by the war neuroses. Rees⁽¹⁾ states that "after 1918 there were over 100,000 pensioners with overt psychiatric disorders, quite apart from those men who drew pensions for psychosomatic illnesses which were given 'organic' diagnoses". The folly of the policy then adopted, that of giving the man a pension and treating him at a repatriation centre, is now well recognized. As a result, psychiatric opinion has resolutely set its face against the indiscriminate granting of pensions to men discharged from the services because of a psychological disability. Unfortunately, certain organizations, in their endeavours to safeguard the interests of ex-servicemen, perceive only the apparent injustice of the policy and overlook the sound principles underlying it. However, it is equally essential to avoid unfair discrimination against the neurotic casualty. If a pension is considered to be a hindrance rather than an aid to the patient's recovery, it must be replaced by something therapeutically superior. A wholesome neglect will not cure the neurotic. The emphasis must be upon treatment and rehabilitation.

In a recent discussion of rehabilitation,⁽²⁾ the importance of the psychiatric aspect was emphasized in view of the fact that 50% of the problems of returned soldiers have been estimated to have a psychological basis. In the years of the present war, an extensive literature upon psychiatric war casualties, with the results of treatment, has appeared.^{(3) (4) (5) (6) (7) (8) (9)} The figures published, however, relate mostly to the position upon the discharge of the patient from hospital. Statistical evidence of the subsequent

health of patients is less plentiful. Hadfield⁽¹⁰⁾ reported that the condition of 60% of those men returned to duty remained satisfactory after three months. No figures are given, however, to indicate the extent of the adjustment made by those discharged to civil life. Similarly, figures published by Cooper and Sinclair⁽¹¹⁾ and by Sinclair⁽¹²⁾ relate only to those returned to duty. They are not helpful, therefore, in assessing the probable extent of the repatriation problem. Lewis⁽¹³⁾ conducted a survey of over 300 ex-servicemen; 120 of the men received personal visits from competent psychiatric social workers, and contact was made by letter with a further 192, of whom 133 replied. The results of the survey showed a disturbing situation. "The men had gone downhill as a group; they were less usefully employed than before, earning less, less contented, less tolerable to live with, less healthy." There may be other published data of which I am not aware. It is obvious that such a follow-up of patients is of great importance. Sinclair⁽¹⁴⁾ in his recent essay upon his experiences of psychiatric casualties under four different sets of conditions, submits that, though little had been done to follow up his series of casualties, such an investigation would probably bring some sobering surprises and serve as a timely reminder of the enormous post-service problem that will confront the psychiatrist. The survey here presented was undertaken in an attempt to ascertain, firstly, how those men who had been returned to some duty in the army were faring, and secondly, how satisfactory had been the adjustment of those discharged to civil life. The results are significant and fully realize Sinclair's prediction. They concern 323 psychiatric casualties who passed through a military base hospital from February, 1942, to March, 1943. The follow-up was made in September and October, 1943. All patients, therefore, had been discharged from hospital for periods varying from at least six months to eighteen months.

THE CASES UNDER REVIEW.

The patients in this series were derived from various sources. Early we received men who had been invalided home from the Middle East. Later casualties arrived from

the Darwin area following Japanese bombing attacks. And finally troops from New Guinea were admitted. With all these, we suffered an early disadvantage—that they had been evacuated far back from the scene of active operations. The influence of this fact upon prognosis was soon evident. Besides these men from operational areas, there was a steady succession of admissions from training camps and base units. As a result, subjects classified as "B" on enlistment because of age or some disability not psychological in nature were among those treated. This fact makes it difficult to compare these figures with others already published and referring to the disposal of "A" class troops. In assessing the value of treatment it was considered a satisfactory result if the man could be returned to duty in the army in the same classification as before his admission to hospital.

Predisposing Factors.

Predisposing factors have been dealt with at length in those other papers already quoted. In this series the following were considered important. The nature and quality of the pre-war personality is all-important; there is an inverse relation between the soundness of the personality and the degree of precipitating stress. The inability to retaliate, the necessity of crouching in shallow dugouts while being shelled and dive-bombed and having to "take it" without being able to fight back, the demoralizing effect of unequal and at times inadequate weapons, were causes stressed by Sinclair⁽³⁾ and borne out by my experience. The influence of inactivity, boredom and lack of recreational facilities was seen in Tobruk,⁽⁴⁾ and undoubtedly played a part in the disorder of some casualties evacuated from north Australia in the early hazardous days of the Japanese attacks. Sex difficulties were uncommon as a predisposing cause. Unfortunately my observations bear out those recently published by Tooth.⁽⁵⁾ The relative frequency with which infidelity in the wife or fiancée was a predisposing factor in the soldier's breakdown was both surprising and distressing. It is an example of the truth that the morale of the fighting man is partly dependent upon the quality and staunchness of the civilian group from which he springs, that the morale of our men is intimately related to the morals of our women.

Analysis of the Clinical Material.

In order that comparisons may be made between these figures and other published data, it is desirable to define some of the terms used. "Neurosis" is used as synonymous with "psychoneurosis". The term "neurasthenia" is avoided, except in its strict sense, because of its hitherto loose and indiscriminate usage. "Psychopathic personality" is employed in a rather broad sense to describe that condition in which the personality is so poorly integrated that the subjects are unable to adapt themselves to any but the minor stresses of life, and in which the separation anxiety resulting from their enlistment and the divorce from their habitual surroundings is sufficient to precipitate neurotic symptoms. It includes also pre-psychotic trends, schizoid and paranoid. This group of subjects corresponds, therefore, with those cases classified by Hadfield⁽⁶⁾ as "psychopathic personality" and neurotics with "no aggravation (Ag-)". The diagnosis "anxiety state" (or "anxiety neurosis") is deemed to include "cardiac neurosis" ("effort syndrome", "D.A.H.", "Da Costa's syndrome") and "gastric neurosis" ("nervous dyspepsia"). It was found that many cases were not clearly defined. Patients whose condition was diagnosed as "anxiety state" not infrequently exhibited some hysterical symptom; while cases of pure "conversion hysteria" were rare. The majority of subjects with predominantly hysterical manifestations showed evidence of anxiety.

Hadfield⁽⁶⁾ was struck by the far greater proportion of anxiety states in this war as against conversion hysteria in the last. He suggests three possible reasons for this change. Others have commented upon it. My experience confirms the observation. Of the 323 patients whose condition is analysed in Table I, 55% were diagnosed as

TABLE I.

Diagnosis.	Number of Cases.	Percentage.
Anxiety state	161	50
Gastric neurosis	7	
Cardiac neurosis	4	
Anxiety state with organic disease ..	17	5
Hysteria	25	8
Psychopathic personality	53	16
Inferior personality	39	
Schizoid trends	9	
Paranoid trends	5	
Congenital mental deficiency	25	8
Neurasthenia	3	1
Psychosis	22	7
Schizophrenia	14	
Manic-depressive psychosis	7	
Alcoholic confusional state	1	
Post-concussion syndrome	10	3
Epilepsy	3	1
Confirmed	2	
Doubtful	1	
Fatigue state	2	1
? Migraine	1	
Peripheral neuritis	1	
Total	323	100

suffering from an anxiety state. Of these, 5% had some organic disability in some way associated with their anxiety symptoms. Twenty-five patients, or 8%, were diagnosed as suffering from hysteria; but of these the condition of only two could be labelled as true conversion hysteria. These two men, both presenting hysterical paralysis, showed that freedom from concern—"la belle indifférence"—so evident in the hysterics of the war of 1914-1918. All the others had evidence of anxiety in addition to the preponderant hysterical manifestations. This figure of 55% as the incidence of anxiety states corresponds closely with Hadfield's estimate of 53%. However, this author found that 24% of his cases were diagnosed as of hysteria, in contrast to my finding of 8%. This discrepancy may in part be due to different diagnostic criteria, but I believe the explanation lies in the fact that most men suffering from hysteria were treated early and never reached this base hospital. Cooper and Sinclair⁽⁴⁾ in Tobruk reported an incidence of 16% of conversion hysteria, though the condition of a number of men with other psychiatric or physical abnormalities had an added hysterical colouring. Of these subjects of conversion hysteria they record that 77% were returned to duty as class "A", a further 20% were reclassified as "B", and only one man was returned to Australia.

The psychosomatic disorders, effort syndrome and gastric neurosis, have been included under the general heading of anxiety states. As will be seen, effort syndrome occurred in only four cases, just over 1%, and gastric neurosis in seven cases, or just under 2%. These figures do not give a true picture of the incidence of these disorders. Although it is recognized that, strictly speaking, both syndromes are functional in nature, they are being recognized more readily by the physician and tend to come more and more under his care. Thus it was that in this hospital these patients were as a rule admitted to a medical ward and did not come under my observation. Though I encountered so few cases in my own wards, I gained the impression that gastric neurosis was far more common than effort syndrome. This is the experience of others.⁽⁶⁾

Psychopathic personality constituted the next largest group. These men make up 16% of all psychiatric casualties, and have been subdivided into inferior personalities (thirty-nine patients), those with schizoid trends (nine patients) and those with paranoid trends (five patients). This incidence is not unduly high when it is remembered that this hospital admitted many recruits who broke down under very little stress, men who should never have been allowed to enlist in the first place. Many writers have emphasized the fact that recruits who had manifest neurotic symptoms before the war rarely made efficient soldiers. An interesting comparison is possible in this regard. If the pre-enlistment histories of those who

volunteered for service with the Australian Imperial Force are compared with those of men compulsorily enrolled in the Militia forces, it is found (Table II) that 32% of volunteers showed pre-war evidence of psychological inferiority as against 68% of Militia conscripts. Nevertheless, this does not mean that men of the Militia cannot make as good soldiers as volunteers, for Sinclair⁽⁹⁾ reported that, among troops in New Guinea, there was no significant difference in the incidence of neurosis. It does seem to indicate, however, that the man of inferior mould tends to hang back until compelled to enlist.

TABLE II.

Comparison of the "Desire for Service" among 149 Patients with Evidence Prior to Enlistment of Psychological Inferiority, with that Found among 174 Patients without Such Evidence.

Group.	Evidence.		No Evidence.	
	Number.	Percentage.	Number.	Percentage.
Volunteered for Australian Imperial Force	48	32	123	71
Militia conscripts	101	68	51	29

Mental deficiency was found as the basis of symptoms in 25 cases, or 8%. This is an average finding. Psychosis occurred in 7% of psychiatric disorders. Of these, in fourteen cases the diagnosis of schizophrenia was made, seven subjects were manic-depressives and one was considered to be suffering from an alcoholic confusional state. This incidence is somewhat higher than that given by Hadfield⁽⁵⁾ and Sinclair.⁽⁶⁾ A probable explanation is that this hospital contained the only wards with special psychiatric facilities in a lengthy line of communication. Whereas, therefore, many men suffering from neurosis would be treated in the general medical wards of hospitals nearer the battle zone, it was certain that all frank psychotics would be evacuated to us.

Treatment.

In the 323 cases under review, a number of considerations influenced the treatment given. As this was a base hospital, many hundreds of miles from any theatre of war, it was anticipated that few acute disorders would be seen, and that the type of casualties received would fall into two classes: (a) those with a constitutional predisposition to psychological disorders and (b) those with symptoms of long duration, who had had previous hospital treatment and in whom the neurosis had become firmly implanted. The management of the first group caused little concern. It was considered that any attempt to rectify the pre-enlistment psychopathic condition was outside the scope of a military hospital. An effort was therefore made simply to assess the soldier's capabilities and reclassify him either for less exacting work in the services or for discharge back to civil life. For example, 40 out of 149 subjects with psychological inferiority prior to enlistment were returned to some duty within the army (Table V). With regard to the second group, little hope

TABLE IV.

Results of Treatment of 323 Patients (100%).	Number.
Discharged as unfit	188 (58%)
Reclassified	75 (23%)
To duty	60 (19%)

was entertained from the outset that many could be made fit to return to front-line duty. With the results of the last war before us, it was decided that patients should remain in hospital and receive adequate treatment until they were well enough either to be drafted back to a post in the army, probably in a lower classification, or to be discharged from service fit to resume a civil occupation without a pension. The average stay in hospital was, therefore, rather long—6.2 weeks, the longest single period being 32 weeks. However, this figure compares favourably with those reported by Sinclair⁽⁵⁾⁽⁹⁾ for troops treated in Palestine and Australia.

Neuroses were treated principally by simple psychotherapy, occupational therapy and graduated work, and finally by an attempt, not always successful because of reluctant army cooperation, to secure proper disposal. Occupational therapy was an integral part of treatment. At first facilities were few, but gradually by the help of the Red Cross Society these were improved, until eventually there were the necessary tools and equipment for carpentry, bootmaking, fitting and turning, art leather work, french polishing, aeroplane modelling, wool-mat making. Out of doors there were a large vegetable and flower garden, and a poultry farm with several incubators. A fully qualified occupational therapist was in charge and there were competent craftsmen to supervise each pursuit. Later the army education instructors gave lectures on varied topics. Rees⁽¹¹⁾ is rather critical of this kind of occupational therapy. However, he is speaking of conditions in England, where almost the whole of the country is in the front line. I am convinced of its great worth, especially where quite a large percentage of patients require rehabilitation for a return to civil life.

In certain cases ancillary methods of treatment were used. Modified insulin therapy was used in eighteen cases. The indications were pronounced loss of weight with loss of appetite and sleeplessness, considerable anxiety and restlessness. In all cases the results were encouraging. An increase of weight, from a few pounds to nearly a stone in three to four weeks, was invariable, and an improved appetite the rule. The treatment assisted psychotherapy, in that the patient had a feeling of physical well-being after perhaps months of ill health, and a rapport was the more readily established. There is no doubt, however, that the contention of Sargant and Craske⁽¹²⁾ is correct, that long-standing neurotic traits, innate in the personality, are not altered, and the method is of little use against a strong psychological resistance to recovery. These authors found it especially useful in speeding up the normal processes of recovery in patients who were to be boarded out of the army, fit to do civilian work, or who were to be returned to readjusted duties.

TABLE III.

Method of Treatment.	Condition.			Results.		Condition Unchanged.
	Schizophrenia.	Manic-depressive Psychosis.	Other Psychosis.	Relieved.	Improved.	
"Cardiazol" convulsive seizures	7	—	—	1	4	2
	—	4	—	2	1	1
Electro-convulsive therapy ..	2	—	—	—	1	1
	—	3	—	3	—	—
Insulin hypoglycaemic shock ..	1	—	—	1	—	—
	—	1	—	1	—	—
No special treatment	4	—	1	1	—	4

Narco-analysis was used, as described by Wilde,⁽¹²⁾ but without the dramatic results evident in many of his cases. "Somnifaine" treatment was employed in only two cases, one of an acute confusional state of hysterical nature, and the other of persistent hysterical vomiting. Both patients made a complete recovery. Convulsive therapy was not used in the management of the neuroses.

In the treatment of the psychoses two methods were used, convulsive therapy and insulin hypoglycæmic shock therapy. At first "Cardiazol" was injected intravenously to induce seizures; later, convulsions were produced by means of the electric current. The apparatus and technique employed were as described by Birch.⁽¹³⁾ This method proved far superior to the use of "Cardiazol". Technically, the operation was simpler; but most important and most noticeable was the absence of apprehension in patients receiving the treatment. In sixteen cases in which convulsive therapy was used, only one complication was recorded—the patient persistently dislocated his jaw. Insulin hypoglycæmic shock therapy was used in only two cases. The results were satisfactory. More use was not made of this treatment because of those difficulties which preclude its more universal adoption—the time-consuming and exacting nature of the technique, and the necessity of having a specially trained staff to watch the patient closely while he is under treatment. The results in this small series are set out in Table III.

The Results of Treatment.

The ideal of all therapy is the complete restoration of the patient. To assess the value of treatment in this series of cases we must bear in mind certain factors which are likely to militate against this successful result.

1. The first factor to consider is the personality of the subject. Rees⁽¹⁴⁾ speaks of the "psychopathic tenth" of the population, and states that few of these men are likely to benefit sufficiently by hospital or out-patient treatment to warrant their being kept in the army. Reference to Table V shows that 149 patients, representing 46% of the

TABLE V.

Duration of symptoms.	Number of Patients.	Percentage.	To Duty or Re-classified.	Discharged as Unfit.
No record	36	11	36	—
Under one month ..	9	3	7	2
1 to 3 months .. .	24	7	12	12
4 to 6 months .. .	27	8	16	11
7 to 9 months .. .	21	7	10	11
10 to 12 months ..	18	5	7	11
13 to 18 months ..	30	10	2	28
Over 18 months .. .	9	3	5	4
Prior to enlistment ..	149	46	40	109
Totals	323	100	135	188

323 examined, had certain evidence of some psychological defect prior to enlistment, that 109 of these were discharged as medically unfit, and that only forty were returned to duty or reclassified. It is obvious, therefore, that from their very nature little could be expected from the treatment of these patients. In Table VI a comparison is made of the results achieved in the treatment and disposal of these 149 patients with those of the other

174 patients of the present series. Whereas in the former only 40 men, or 27%, were sent to some post in the army, 95 out of the remaining 174 cases, or 55%, could be retained in the services. These facts argue that the man with the better personality is more likely to make the most complete recovery.

2. All experience in the last war⁽¹⁵⁾ and this,⁽¹⁷⁾ as well as in civilian practice, has shown that, if the treatment of the neuroses (and psychoses) is to be effective, the conditions must be diagnosed and treated early. Table V sets out the length of time for which symptoms had been present on the patient's admission to this hospital. The table does not show the interval between the onset of symptoms and treatment, as many patients had been in one and sometimes many hospitals before reaching us. Nor does it take into account the numerous physical examinations and special investigations which had often been performed in a desperate attempt to exclude everything organic, and which had tended to fix the patient's attention upon his symptoms and establish more firmly his neurosis. It will be seen that in cases in which symptoms had been present for under six months the number returned to duty or reclassified for adjusted work (35 cases) was a little greater than the number boarded out of the army (25 cases). Another 36 men possibly fell into this group, as they were all suffering from relatively acute maladjustments and all were discharged to duty; however, no records of the duration of symptoms were available. In those cases in which symptoms were of over six months' duration, the story was different; 64 of the patients were found places in the services and 163 had to be boarded out. In three months there is ample time for neurotic symptoms to become firmly established. How much more deeply implanted, then, were the complaints of this 71% whose histories indicated that symptoms had been present for over six months! In view of such a handicap, it is not surprising that the figures for a return to duty were not better.

3. The detrimental effect on prognosis of evacuation of the neurotic casualties from the line was recognized in the last war.⁽¹²⁾ Admission to this base hospital was consequent upon removal many hundreds of miles from any battle zone. In considering the importance of evacuation to a safe area, it is immaterial whether one subscribes to the conception of the psychopathology of a war neurosis as an unconscious desire to escape from further danger and possible death by the development of symptoms, or leans to the recent suggestion of Fairbairn⁽¹⁸⁾ that "it is towards a return to his home and loved ones, rather than towards an escape from the dangers of the battlefield, that the neurotic soldier is orientated", and that it is "not so much that he craves to go home because he is ill as that he becomes ill because he craves to go home". In either case, evacuation many miles to a base hospital satisfies the unconscious wish—either to escape further distasteful service or to avoid further "separation-anxiety" by being reunited, and staying united, with his loved ones. Moreover, the necessity of evacuation puts the seal of official approval (in the patient's mind) upon the genuineness of his disability. As a result it is more difficult to convince him that his symptoms are psychological in nature and the manifestation, not of some malady, but of his failure to become adapted to the changed state of things.

The distribution of the incidence of psychiatric disorders according to age is shown in Table VII. It is impossible

TABLE VI.

Comparison of the Analysis of 149 Cases in which Prior to Enlistment Evidence of Psychological Inferiority was Present with that of the 174 Other Cases in this Series.

Follow-up Group.	To Duty or Reclassified.		Medically Unfit.			
	Army.	Unfit.	No Records.	Pension Claim.	No Claim.	No Records.
Evidence prior to enlistment (149 cases) .. .	14	13	13	42	52	15
Others (174 cases) .. .	53	14	28	58	10	11

to arrive at any definite conclusion, as the relative proportions of each age group in the general army population were not known. If we arbitrarily group together all those subjects under thirty years of age and all those over thirty, we find that 175 casualties were aged under thirty years and 148 over that age. Superficially, therefore, age seems to bear no significant relationship to the incidence of psychiatric casualties.

TABLE VII.

Age. (Years.)	Number of Patients.	Percentage.	Discharged as Unfit.	To Duty or Re- classified.
Under 20 ..	10	3	5	5
20 to 25 ..	100	31	55	45
26 to 30 ..	65	20	35	30
31 to 35 ..	53	16	39	23
36 to 40 ..	61	19	43	18
41 to 50 ..	31	10	19	12
Over 50 ..	3	1	1	2
Total ..	323	100	188	135

If the foregoing facts are borne in mind, the results achieved, as summarized in Table IV, were not unsatisfactory. Sixty patients, or 19%, were returned to duty. It is important to remember that this figure refers to the number of patients who, at the completion of treatment, were considered fit enough to rejoin units in the same classification as when they were admitted to hospital. Another 75 men (23%) were reclassified and discharged in a lower class than upon their admission to hospital. More than half the total admissions, 188 patients, or 58%, were boarded out as medically unfit for service.

Follow-up of 94 Patients Returned to Duty or Reclassified.

In an attempt to justify conclusions so far reached, a survey of as many of the 323 cases as possible was carried out after a lapse of at least six months from the date of discharge from hospital. Sixty-seven men could not be followed up; they were interstate personnel and it was not possible for me to peruse their records.

Of the 135 men returned to duty or reclassified, 94 were traced. The two groups, those discharged to their unit and those reclassified, are presented together rather than separately, because, as has been mentioned previously, "discharged to unit" may mean that a B class man had been returned to duty with his B class unit, and the fact that he was B class in army records at the time of the survey was no indication that he had subsequently been reclassified after discharge from hospital. As a standard of a satisfactory result, therefore, it was decided that, if a man was still in the services at the time of the survey—that is, for at least six months after his discharge from hospital—then he had presumably adjusted himself to his work and made a sufficient recovery. Table VIII sets out in detail the results of this follow-up. It will be seen that

TABLE VIII.

Follow-up of 94 Men Returned to Duty or Reclassified.

Diagnosis.	To Duty or Re- classified.	Present Position.	
		Discharged.	In Army.
Anxiety state	64	13	51
Cardiac neurosis ..	2	—	2
Gastric neurosis ..	1	—	1
Hysteria	7	2	5
Post-concussion syndrome ..	1	1	—
Psychopathic personality ..	7	3	4
Congenital mental deficiency ..	7	3	—
? Epilepsy	1	1	—
Fatigue state	2	—	2
Alcoholic confusional state ..	1	—	1
Peripheral neuritis ..	1	—	1

TABLE VIIIb.

Duration of Symptoms.	To Duty or Re- classified.	Present Position.	
		Discharged.	In Army.
No records	26	4	22
Under three months ..	11	—	11
Three to six months ..	11	1	10
Over six months	19	9	10
Prior to enlistment ..	27	13	14

TABLE VIIIc.

Age. (Years.)	To Duty or Re- classified.	Present Position.	
		Discharged.	In Army.
Under 20	5	1	4
20 to 30	46	12	34
30 to 40	27	9	18
Over 40	16	5	11

71% of these men were still in the army. This is somewhat better than Hadfield's figure of 60%.⁽²⁾ Men suffering from anxiety states constituted the bulk of those returned to duty or reclassified, and of these 84% remained in satisfactory condition and carried on. The analysis of the figures in relation to the duration of symptoms confirms the impression that the earlier the treatment, the better and more lasting the result. Of 22 patients whose symptoms had been present for under six months, 21 were still in the army, whereas 22 out of 46 men (or just under half) whose symptoms had been present for more than six months had been discharged as unfit at the time of the survey. Of the 26 patients for whom details were not available, but who were presumably suffering from acute conditions of short duration, 22 proved satisfactory and only four were later discharged. Though there was no significant incidence of psychiatric disorder in any particular age group, there was some evidence to suggest that treatment was less successful in the case of the man at or past middle age than in the case of the younger man. Of those aged under thirty-five years, 103 men out of 228 (or 45%) were sent back to some useful work in the armed forces, but only 32 out of 95 men aged over thirty-five years (or 34%) could be rendered fit for some type of service. However, in the follow-up figures, it will be seen that 75% of men aged under thirty years and 67% of those aged over thirty years were still serving at the date of the review. It would thus appear that the older man, if he can be made well enough for discharge to a place in the army, can carry on almost as well as the younger.

Follow-up of 162 Men Discharged as Medically Unfit.

Of the patients discharged from the services as medically unfit, it was possible to follow up 162. In order to arrive at some estimate of the lasting efficacy of treatment, a satisfactory standard for comparison was necessary. The most accurate and most useful information is derived from a survey such as that made by Lewis,⁽³⁾ to which reference has already been made. This was not possible. Australia is sadly in need of many more fully trained and competent psychiatric social workers, and no one was available for an extensive survey. A limited investigation along these lines was carried out by Miss Eileen Davidson and is reported later. Miss Davidson, a qualified psychiatric social worker, is, however, attached to the Red Cross Society, and carried out these personal interviews in her own time and as a personal favour. Finally, it was decided that useful inferences as to the permanence and completeness of the therapeutic result could be drawn by reference to that very standard set as the criterion of a satisfactory readjustment—the patient's ability to return to, and continue in, a civil occupation without a pension.

It is recognized that the fact that a man is carrying on without a pension is no sure indication that he is symptom-free. It is admitted that at present jobs are easy to get, wages are high and some men may be persevering in well-paid, light work who could not stand up to the sterner competition of their more stable brothers in the post-war years. Nevertheless, if a man can manage without a pension after at least six months in civil life, it is an indication at least that he is in reasonably good health.

On the other hand, the fact that a man claimed a pension on discharge from the army is not considered to be conclusive evidence that he really believed he needed one to carry on efficiently. Our present system of granting pensions encourages a man to make a claim. It is certain that many men do so, not because of any real necessity, but just on the off-chance that one may be granted. Still, it is argued that if an ex-serviceman appeals against a rejection of this early claim, in a majority of cases he believes he has a disability that reduces his earning capacity or impairs his general health and thereby renders him eligible for monetary assistance. I admit readily that there is a type of man who will lodge appeal after appeal just in the hope of getting something for nothing. These figures no doubt contain a few of them. But I believe these individuals constitute only a small proportion of the total number. The conclusion reached, therefore, is that the method of assessing results, though open to criticism and by no means mathematically accurate, is nevertheless valuable as a pointer to the percentage of psychiatric casualties who remain maladjusted upon return to civilian life. Details of this investigation are analysed in Table IX.

TABLE IX.
Follow-up of 162 Men Discharged from the Army as Medically Unfit for Service.

Pension Claims.	Number of Men.	Percentage.
No application	62	38
Claim for pension	100	62
Claim accepted	18	11
Claim rejected	81	
Claim pending	1	
Appeals against Assessment—		
Number appealing on one or more occasions:		
(a) Against rejection of claim	37	26
(b) Against existing rate	5	
Appeals allowed	11	
Appeals disallowed	23	
Appeals pending	8	
Number of pensions granted on first application	18	11
Number of pensions granted on appeal	8	5
Number of increases in pensions allowed on appeal	3	2
Number of appeals disallowed (c)	29	18
Number now receiving pension (d)	26	16
Number of appeals for assistance (c plus d)	55	34

Of the 162 casualties, 62 (or 38%) made no claim whatsoever for a pension. We may assume, therefore, that these men believed on their discharge that they had no disability as a result of war service and were capable of resuming their civil occupation. As none of them had applied subsequently for a pension, up to the time of collection of the figures, they must have made a complete adjustment in the return to their pre-enlistment environment. One hundred men (or 62%) applied for a pension on their discharge. Of these, only 18 were considered to have a pensionable disability; 81 claims were rejected and one was undecided at the time of the perusal of the records. Of the 81 casualties whose claims were rejected, 37 appealed against the decision on one or more occasions, while five of those granted a pension appealed for a higher assessment. The following inferences can be made from these details. Firstly, 44 men submitted a claim for pension without pressing their claim; it is not unreasonable to assume that they were motivated by a "give it a go" spirit rather than by any conviction of genuine entitle-

ment, and were not amazed when the claim was rejected. Secondly, we may conclude, with the reservations discussed above, that the 42 men who appealed (or 26% of those discharged as medically unfit) considered they were not sufficiently well fully to resume their civil work. Of these appeals eleven were allowed; eight men were allotted a pension as a result of their appeal and three an increase in the existing rate of pension.

Thus, as the figures stand, 26 persons, representing 16% of the 162 soldiers discharged as unfit in this State, are receiving pensions. However, this does not certify that the other 29 men, who appealed against the rejection of their claim, but whose appeals were disallowed, were completely well and able to work. Many of these 29 men may have been in urgent need of further psychiatric treatment. Ex-servicemen acknowledged to be entitled to a pension and treatment and those probably in need of assistance total 55, or 34% of those discharged to civil life. This figure is, I believe, a pointer to the percentage of psychiatric casualties who on discharge will require further psychological treatment.

In an attempt to judge the extent of their social and economic readjustment, 25 men were interviewed by a competent psychiatric social worker; 24 men were personally interviewed; the other, living in the country, was interrogated by letter. This survey unfortunately was limited for the reasons already stated. Inquiry was made into the following points: the number of jobs held by each man since his return to civil life; the length of time in the present position; the condition of his health, determined rather by the positive evidence of admittance to hospital or his consulting a doctor in regard to neurotic symptoms, than on his own subjective statements. Finally, by talking to the man and his closest relatives (wife or mother, if possible) and observing his general demeanour and the condition of his environment, the social worker endeavoured to assess his social adaptation. This adjustment was represented as being good, fair or bad according to whether the man appeared to be succeeding or not in living harmoniously, contentedly and tolerantly in relation to his home environment and his work. The subjects were chosen more or less at random, except that only those who had applied for a pension on discharge were included. That is why men of all categories, psychotics and mental defectives not excepted, are listed. The conclusions summarized in Table X were reached after discussion between the social worker and myself.

It will be seen that thirteen men were considered to have made a good readjustment, four men to have made a fairly satisfactory adjustment and eight men to be badly adjusted. Of these men, one who had made a good adaptation received a pension, whilst one who had made a fair adjustment and two who had made bad adjustments to their environment were also given pensions. If it is assumed that only those ex-servicemen who have become well adjusted in civil life may be regarded as requiring no further help, we find that twelve of the men interviewed were in need of further supervision and encouragement. Four only of these had given definite evidence of psychopathic trends prior to enlistment, although all the others had less obvious signs of a personality defect.

This figure of 12 men out of 25 corresponds closely with that arrived at by an analysis of Table IX. From this it was deduced that 55 men were still in need of psychiatric care. These represent 55% of the 100 soldiers who claimed a pension on their discharge, the group from which were selected the subjects of this follow-up.

To sum up, then, it would appear from the figures collected that about two-thirds of psychiatric casualties discharged from the services as unfit sign a claim for a pension, but that only half of these believed their health and efficiency had suffered as a result of war service to such extent as to warrant their appealing against the rejection of their claim. This survey shows, also, that approximately one-third of discharged servicemen with psychiatric problems require further help, even though their claim for a pension may have been refused.

TABLE X.

Number of subject.	Diagnosis.	Age. (Years.)	Duration of Symptoms.	Number of Jobs.	Duration of Present Job.	Remarks on Present Health.	Adjustment.
1	Hysteria.	23	7 months.	2	2 weeks.	Enlisted in Merchant Navy.	Good.
7	Anxiety state.	37	13 months.	1	19 months.	No medical treatment.	Good.
17	Hysteria.	40	7 months.	1	15 months.	Treatment in repatriation general hospital.	Good.
36	Schizophrenia.	28	Prior to enlistment.	1	Unemployed.	Admitted to hospital.	Bad.
42	Manic-depressive psychosis.	22	3 months.	1	14 months.	Depressed at times.	Fair.
50	Hysteria.	39	12 months.	2	13 months.	Reenlisted in army (Pay Corps).	Good.
58	Congenital mental deficiency.	32	Prior to enlistment.	6	4 months.	Much medical treatment.	Bad.
71	Anxiety state.	30	13 months.	5	Not known.	Admitted to hospital.	Bad.
78	Psychopathic personality.	35	Prior to enlistment.	1	15 months.	No medical treatment.	Good.
96	Anxiety state.	30	4 months.	1	10 months.	Still complains of symptoms.	Fair.
116	Hysteria.	37	18 months.	3	9 months.	No medical treatment.	Good.
126	Congenital mental deficiency.	28	Prior to enlistment.	2	7 months.	Twice consulted a doctor.	Good.
135	Anxiety state.	24	15 months.	4	5 months.	Admitted to repatriation general hospital.	Bad.
153	Psychopathic personality.	40	Prior to enlistment.	2	8 months.	No medical treatment.	Good.
163	Schizophrenia.	22	9 months.	1	11 months.	No medical treatment.	Bad.
173	Psychopathic personality.	28	Prior to enlistment.	3	4 months.	No medical treatment.	Good.
181	Anxiety state.	22	6 months.	18	2 weeks.	Much medical treatment.	Bad.
191	Psychopathic personality.	20	Prior to enlistment.	2	3 weeks.	Seen by a doctor.	Fair.
217	Anxiety state.	40	19 months.	1	10 months.	Treatment at repatriation general hospital.	Good.
239	Anxiety state and otosclerosis.	22	12 months.	2	5 months.	No medical treatment.	Good.
258	Anxiety state.	35	5 months.	2	3 months.	No medical treatment.	Good.
270	Schizophrenia.	34	4 months.	—	Unemployed.	No medical treatment.	Bad.
293	Psychopathic personality (paranoid).	25	Prior to enlistment.	1	10 months.	No medical treatment.	Good.
304	Psychopathic personality.	37	Prior to enlistment.	1	9 months.	Much medical treatment.	Fair.
313	Anxiety state.	39	15 months.	5	1 day.	States health much worse.	Bad.

THE REPATRIATION PROBLEM.

The figures quoted give some indication of the magnitude of the problem facing medical men, the repatriation authorities and the Commonwealth Government in the post-war period. It must be remembered, too, that these cases include few of the psychosomatic diseases, such as effort syndrome and gastric neurosis. There is every indication that these states will be as important a cause of ill health and lost efficiency as after the last war. Though figures are not available, the incidence of psychosomatic diseases is shown to be high by the fact that a special ward was set aside, in this base hospital, for the investigation of gastric disorders, a large proportion of which were functional in nature. Again, no reference is made to those men with chronic medical disorders, the main disability of whom, as Todd⁽⁷⁾ states, is psychological, whatever diagnosis is attached to their condition.

Theoretically, there are two methods of reducing this liability. Prevention can accomplish much. This can take two forms: the proper selection of recruits, with early elimination of the psychologically unfit, and early diagnosis and treatment, as near to the front line as possible, in the case of men breaking down under service conditions, evacuation being regarded as a last resort. Treatment in a base area can yield much poorer results. The specific aim always kept in mind in the treatment of this series of patients was to retain a man in the services until he was rendered well enough to return to his civil occupation and environment without a pension. Several factors militated against the successful fulfilment of our purpose. Psychiatrists have always to contend with the man who, through the medium of his symptoms, unconsciously desires to escape further military service. His symptoms are his "pass-out check", and while there is the possibility of his having to serve, psychotherapy falls on deaf ears and cure is impossible. By the same token, however, symptoms are likely to persist after discharge from the services, for the patient is apt to cling to his "disease" as his insignia of a honourable discharge. Many men, also, are so eager to get out of the army that they minimize their symptoms and even delude themselves with false ideas of their capabilities. They all work on the fallacious assumption that by eschewing the army and all its works they will likewise lose all their unpleasant symptoms. Men of inferior type, who have broken down simply from the stress of being removed from their accustomed niches, are often rehabilitated by a return to their pre-enlistment environment. The others tend to suppress their complaints and so convey them into civil

life. There the ex-soldier discovers to his cost that the symptoms he had sought to escape by severing his associations with all things military retain their ability profoundly to affect his peace of mind and his physical health. This projection into civil life of neurotic symptoms which have in many cases become overt during military service, forms the basis of repatriation psychiatric practice. Finally, owing to the constant flow of casualties and the ever-present demand for beds, it is often impossible to keep a patient in hospital as long as is really necessary for his complete rehabilitation. The fact remains that a general military hospital is not organized to handle psychiatric casualties effectively.

A large number of psychiatric casualties, therefore, will flood out into civil life with their symptoms unrelieved, unless some remedy is found. A pension serves no useful purpose. Psychiatrists believe that a pension only serves to confirm in the recipient's mind the idea that his symptoms must be due to some organic lesion resulting from war service. But more than this, it is an indication of lost efficiency and impaired health. To the neurotic, a pension serves as a prop to his self-esteem and represents partial security. The disappearance of symptoms is synonymous with a lowering of economic support. To be cured is to lose security. Thus there is added anxiety over the possible loss of income, and the unfortunate neurotic tends to lean more and more on his pension and less and less on his own efforts. "To discharge such a person and to give him a pension instead of treatment is to condemn him to a life of suffering in which he will be a misery to himself and a sore trial to those among whom he will live."⁽¹⁰⁾

It remains for us, therefore, to see that the emphasis is placed upon treatment rather than on pension in any consideration of the rehabilitation of servicemen with psychological disabilities—and I include in this group the often large psychological element present in surgical and medical cases. It has been well said⁽¹¹⁾ that though it behoves us to give every legitimate and reasonable monetary assistance to those entitled to receive it, the essence of rehabilitation lies not in pensions or other monetary aid, but in so directing or leading a man that he will stand upon his own legs and create his circumstances rather than be controlled by them. Therein lies the weakness of the present repatriation system. Everything revolves about "an entitlement". It is necessary to show that the condition has resulted from, or been materially aggravated by, war service before an entitlement is accepted. With an entitlement, a man is eligible for a

pension and treatment at the expense of the Repatriation Commission; without it, neither pension nor treatment can be secured. As a result, repatriation is denied what should be its primary function, rehabilitation, for the Oxford English dictionary gives as a definition of the word to "rehabilitate", "to restore to a previous condition". Only those who allow their personal prejudices to sway their judgement will deny that the man temperamentally unstable and of inferior personality, who has broken down solely as the result of enlistment and who cannot as a consequence readjust himself to civil life upon his discharge, should be entitled to every psychiatric assistance in an endeavour to make him again a useful member of society. The question of a pension does not arise. Nevertheless, treatment should not be denied him because his entitlement states baldly that his disability is not due to war service.

It seems certain that, if we are to deal rationally with the psychiatric casualty, an entirely new approach to the problem is necessary. It will be essential to adopt the expressed intention of the British Ministry of Pensions⁽¹⁾ to provide treatment for, but not to give pensions except in exceptional cases to, men who broke down with neurotic symptoms. Enlistment in the armed forces must be sufficient to entitle a man to receive treatment. Such treatment must be by psychotherapy and by the provision of suitable employment. Gillespie⁽²⁾ has defined psychoneuroses as "social disorders of individuals", and he goes on to state that the disturbed social relationships mentally introjected may be in regard to other persons or to oneself. Psychotherapy will be required for the latter; with regard to the former, Lewis⁽³⁾ has remarked that suitably selected occupation can be a more potent factor than psychotherapy or drugs in furthering mental health. It is gratifying to know that the proposed Commonwealth training scheme is to be broad in its application and liberal in its terms of eligibility. Through it, it should be possible to place adequately discharged psychiatric casualties. There is, however, one disturbing feature. The scheme is divorced from repatriation, and the enormous therapeutic benefits to be derived from it have apparently not been fully appreciated. It seems anomalous that a discharged neurotic may be eligible for assistance under the Commonwealth training scheme and yet be denied equally essential psychotherapy by the Repatriation Commission, on the grounds that his disability was not due to war service. Together—treatment and suitable employment—the two departments would play a tremendous part in solving the difficult problem of the neurotic ex-soldier. Repatriation would become synonymous with rehabilitation. Separately, they lose their mutual support and the value of each is not nearly equal to half their sum.

It is evident that no solution has as yet been found for the problem. To solve it is urgent. The only way is to lay down a definite policy in regard to psychiatric casualties. It is time it was realized by those in authority that these cases cannot be dealt with in the same way as the more straightforward medical and surgical cases.

The primary aim must be to treat patients in service hospitals until they are fit to resume their civil life. This end may not be realized for reasons already given. Thereafter, in fairness to the patient, it rests with medical boards to show every care in assessing attributability. In this regard, the classification of psychiatric casualties into four categories by Hadfield⁽⁴⁾ for the assistance of medical boards would be very useful if adopted. The four categories of casualties are as follows: (a) "constitutional" (in the army sense)—that is, those with had predisposition whether strictly constitutional or acquired, such as the chronic neurotics, whose condition was not materially aggravated by war service; (b) "constitutional but aggravated by war service"—that is, those whose condition was materially aggravated by war service, but in whom the predisposing factor was more important than the precipitating factor; (c) "bombing, etc., by enemy action in a person predisposed to neurosis"—a group in which the precipitating factor was more important than the predisposing or constitutional factor; and (d) "bombing, etc., by enemy action"—a group in which the predisposition

was immaterial and the war experience was all-important. Such a classification stresses the need for defining the extent to which the disability is the result of predisposition and of war service. It automatically sifts out those who are not in any circumstances entitled to a pension. However, as has already been emphasized, all neurotic casualties must be entitled to psychiatric treatment, and the emphasis must be upon treatment and not upon pension. As Turnbull⁽⁵⁾ has stated, such an attitude will be unpopular, but the profession must hold out and refuse to be stampeded into accepting lay dictation, whether military or civil.

In considering treatment of the discharged neurotic, a proper evaluation of both psychotherapy and useful, gainful work must be made. Special hospitals where patients will be resident⁽⁶⁾ and under the supervision of trained psychiatrists must be provided. A close liaison between doctor and the authorities controlling manpower and the Commonwealth training scheme must be established for the satisfactory disposal of men back into industry. Such rehabilitation centres have been set up in England for the treatment of the disabled.⁽⁷⁾⁽⁸⁾⁽⁹⁾⁽¹⁰⁾⁽¹¹⁾⁽¹²⁾ (Though these articles refer particularly to rehabilitation after accident or injury, the good results obtained are, without doubt, due to the union of the physical and psychological aspects of disease and their combined treatment.)

The influence of domestic, social and economic maladjustments upon the prolongation of neurotic symptoms is well recognized. There are no grounds for assuming that all is well in these spheres in the case of the neurotic whose symptoms have become overt during service. Nor is his discharge from hospital as cured any proof that his subsequent adjustment will be complete. Any policy of therapy, therefore, must provide for the employment of trained psychiatric social workers, in order that accurate reports shall be available to the psychiatrist concerning the patient's home-life and working environment, and for the periodic follow-up of patients to assess their readjustment after discharge from hospital. It has been said that inquiry on the part of the Repatriation Commission or other responsible authority into his economic and social adaptation would be strongly resented by the ex-soldier. These objections have not received any support from British experience. In the present inquiry, the psychiatric social worker was pleasantly received and the information willingly supplied. Far from showing active resentment, every man appeared gratified that someone was taking an interest in his welfare.

In such a scheme, there is continuity of supervision from the time the man is discharged from the forces, through psychological treatment, occupational therapy and vocational training, to the time when he is placed in suitable and congenial employment and for any necessary period thereafter.

Butler⁽¹³⁾ in his survey of the last war, states that mental conditions overshadow all others among causes of disability. They should take precedence over all others when any policy of rehabilitation is being devised. The war progresses. Psychiatric casualties return in a continuous stream. Those unrelieved despair and their symptoms become more firmly implanted. The loss to industrial efficiency is considerable. And time slips by, and still the primary argument centres about whether psychiatric casualties should receive pensions or not. It is hoped that the figures collected and presented here will serve to show the magnitude and urgency of the problem.

SUMMARY.

A survey of 323 psychiatric casualties treated in a base military hospital has been made. This shows that only 19% of patients could be returned to their units; 23% were placed in a lower classification, and 58% had to be discharged from the forces as unfit.

Predisposing factors and factors influencing the results of treatment are discussed. Evidence is presented in support of the opinion that neurotic complaints should be treated as near the front line as possible and that the sooner treatment is commenced after the onset of symptoms the better the prognosis.

The fate of 94 men returned to duty or reclassified has been investigated. It is shown that 71% were still serving in the army after a lapse of from six to eighteen months from their discharge from hospital.

From a survey of 162 men discharged from the services, evidence is put forward that suggests that at least one-third of all psychiatric casualties returned to civil life are in need of further psychiatric supervision.

A plea is made that all psychiatric casualties, irrespective of whether their symptoms are considered to be the result of war service or not, should be eligible for treatment. In no other way can we ensure that all ex-servicemen shall receive equal opportunity for adequately adjusting themselves to civil life. The question of pensions need never arise.

It is submitted that a concrete policy must be evolved for the treatment of psychological illnesses. Some suggestions are made, among which the following are important: the necessity for special psychiatric rehabilitation centres with facilities for in-patient treatment under qualified psychiatrists; the provision of facilities for occupational therapy and vocational training under the Commonwealth training scheme; an intimate liaison between the rehabilitation centre and employment agencies to secure suitable employment for men discharged as relieved; and finally the provision of competent psychiatric social workers to investigate home and factory conditions, to assess environmental influences and to carry out periodical follow-up investigations into the men's adjustment to civil life.

We can do much for these unhappy men if only we plan wisely and well. I conclude with a remark by Aubrey Lewis: ⁽⁶⁾ "It is easier to remember that illness can prevent work than that work can prevent illness—if only the work is well chosen."

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POST-MORTEM CHANGES IN SCRUB TYPHUS.

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THE following account of the autopsy findings in scrub typhus is based on 24 autopsies performed by me, and on reports of a further eleven deaths occurring at this hospital. In most of these cases microscopic sections of many organs were examined.

The distribution of deaths according to the day of the disease on which they occurred is shown in Table I, the maximum frequency being at the end of the second week, although half the deaths took place during the third week.

TABLE I.

Day of disease on which death occurred	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Number of deaths	1	2	1	2	1	4	5	2	3	3	2	2	2	2	3

The Weil-Felix test produced reactions during the illness, or with serum obtained *post mortem*, in all but seven of these cases. In these seven death occurred on the seventh, ninth, twelfth, fourteenth, fifteenth, sixteenth, seventeenth and eighteenth days.

General Findings.

Post-mortem examinations were performed within two to ten hours of death. *Rigor mortis* was present in most cases and post-mortem staining was pronounced. The skin and subcutaneous tissues were usually stained yellow with "Atebrin". Subcutaneous, retroperitoneal and mediastinal fat was not reduced in amount, but there was considerable muscle wasting.

The Brain.

In the majority of cases there was little abnormality to be seen on examination of the brain. Occasionally, however, the brain was swollen, the leptomeninges were oedematous, or the vessels on the surface of the cerebrum were injected to their finest branches. On section the brain substance was usually much softer than normal, and from the cut vessels blood drained. The chorioid plexus was often large and oedematous.

The cerebro-spinal fluid was occasionally increased in amount, and in some cases slightly opalescent or xanthochromic.

Microscopically there were few unusual findings apart from many mononuclear and small round cells in the meninges and around larger vessels. In a few cases the smaller vessels within the brain substance were shadowed by round cells. The microglia and oligodendroglia were not increased. Frequently small hæmorrhages could be seen, particularly in the pons and mid-brain.

An estimation of the finer neuronal changes which may occur in toxic and degenerative conditions was not possible.

Microscopic examination of the chorioid plexus revealed œdema in many cases, and many large mononuclear and small round cells were scattered through the loose tissue, sometimes gathered near vessels.

The Pituitary Body.

In some cases the pituitary appeared to be congested. A general clouding of the normal structure was noted, and may have been due to autolytic changes. In rare cases there appeared to be an increase in the number of small round cells in the gland.

The Thyroid Gland.

In two cases there was a diffuse colloid goitre, and an "adenoma" of the thyroid was present in a further two cases. Hemorrhage had occurred in one of the latter cases, and, escaping from the gland, blood had tracked down through the infrathyroid muscles to the superior part of the mediastinum. No specific rickettsial changes were seen in sections.

The Heart.

In a majority of cases the pericardial cavity contained an excess of straw-coloured fluid, often slightly turbid, and occasionally with flakes of fibrin. The amount present was usually about 30 cubic centimetres, but in seven cases it exceeded 100 cubic centimetres.

The heart was rarely abnormal in size. At times scattered petechial hemorrhages were seen on the surface, generally of the left ventricle. In a case in which hemorrhage into the thyroid was also found, there was a small hemorrhage into the superficial muscle fibres and subepicardial fat in the region of the interventricular septum just below the pulmonary valve.

Some roughening and injection of the epicardium around the great vessels was noticed in four cases. In nearly all cases the muscle was pale and soft.

The microscopic appearance was most striking. Sections were made from sixteen hearts, generally from the interventricular muscle. Some infiltration of round cells was seen in all cases, but in a typical section many cells were present. The spaces between bundles of fibres and between individual fibres were opened up. Œdema fluid was seen only once.

In the spaces between the bundles and fibres were numerous large mononuclear and small round cells. Plasma cells, macrophages and scattered polymorphonuclear cells were also seen. The cells were spread diffusely through the muscle, but were sometimes accumulated in groups, not necessarily in close relation to a vessel. The aggregations were more intense near the endocardial surface.

The somewhat separated muscle fibres appeared to be thin and narrow. Occasionally a few fibres had a glazed, hyaline appearance, and in three or four sections fragmentation of the fibres was pronounced. Post-mortem autolysis may have helped to produce these changes in the parenchyma.

In two sections the endothelium of the heart was swollen. A collection of small and large mononuclear cells projected irregularly above the surface to entrap a number of erythrocytes.

Upper Portion of the Respiratory Tract.

The glottis was œdematous in three cases. The larynx and trachea were sometimes injected. Thick mucus, occasionally blood-stained, was found in the trachea and larger bronchi in some cases.

The Lungs.

From a consideration of the microscopic changes, the development of pulmonary lesions appears to be as follows. The alveolar walls become thickened, partly by dilatation of the capillaries and swelling of the lining cells, and partly by accumulation of large and small mononuclear cells, particularly in the interstitial tissue. The cells

lining the alveoli desquamate into the lumen and small hemorrhages occur, due in some part to toxic changes in the capillary wall and in part to congestion of the lungs following myocardial weakness. Thus masses of typical "heart-failure" cells—large macrophages containing brown pigment granules—are frequently seen. Fairly large hemorrhages into the alveoli are sometimes present, and a few infarcts are seen.

In the fully developed lesion the alveoli were seen to be further invaded by large mononuclear cells and lymphocytes, with the production of an area of complete consolidation. Scattered "bubbles" of air were sometimes found in the otherwise solid and cellular lung.

The bronchioles were usually clear, but at times contained collections of cells similar to those found in the alveoli. In a number of cases acute bronchitis was present, and sometimes acute and widespread bronchopneumonia was superimposed on the picture of congestion and cellular exudation.

Macroscopically, these changes were recognizable on the surface of the lung as dark purple areas, usually firmer than the normal lung, often standing out as solid lumps like infarcts, but more frequently appearing as a general solid congestion of some or all of a lobe, with partial compression or collapse. Either one or both of the lower lobes was commonly affected, and at times the bases of the upper lobes were also involved. In about one-third of the cases the process was confined to areas one to three centimetres in diameter.

The cut surface of the affected lung was dark red in colour, wet with blood rather than dry, non-crepitant and fleshily firm rather than friable. In cases in which the lung broke under pressure, acute infection was usually found microscopically. True hemorrhagic infarcts were found in only four of twenty lungs from which sections were made.

In only four cases was œdema of the lung obvious to the naked eye. Minimal fluid exudate was seen microscopically in a few other cases. Acute infection, bronchitis or bronchiolitis was present in about one-half of the cases, extending to a bronchopneumonia in one-third. As a major factor in the causation of death, widespread bronchopneumonia was present in only three cases.

Tracheobronchial and mediastinal lymph glands were much enlarged, reddened and soft when acute infection was present, but were not prominent in the majority of cases.

Pleural effusion was common; in more than half the cases yellowish-brown fluid was present in amounts from 50 to 500 cubic centimetres in one or both pleural cavities. It was common to see flakes of yellow fibrin on the lung surface, usually near the interlobar fissures. Old adhesions from previous pleurisy were present in three cases.

The Peritoneal Cavity and Intestines.

The peritoneal cavity contained free fluid in half the cases, the amount generally being 100 to 300 cubic centimetres, and at the same time œdema of the retroperitoneal tissues was often seen. (It is to be noted that an associated pleural effusion was usually present.)

Little change was seen in the intestines. Rarely a few petechial hemorrhages were found in the gastric or duodenal mucosa. The small intestine, towards the lower end, was at times injected. The mesenteric lymph glands in the majority of cases were numerous, much enlarged and pink in colour.

The Liver.

In half the cases the liver was enlarged, in four much so, being sometimes double its normal weight. Generally the cut surface was pale, but the centre of the lobules was congested. The substance was soft. Only once was a well-developed nutmeg appearance found.

Microscopic examination usually revealed some congestion of the central veins and their radiating sinuses, with consequent compression of the medial portion of the liver cell columns. Within these flattened liver cells around the central vein were granules of bile pigment. At

the outer edge of the lobule the cells appeared normal, though a varying degree of fatty degeneration was sometimes present. In one case a fine fatty degeneration of the cells was seen throughout the lobules; in others a few large fat droplets only were found in the peripheral portions. On the whole remarkably little fat was evident.

Within the dilated sinusoids the Kupffer cells were sometimes prominent, and scattered polymorphonuclear and round cells were present. The portal tracts were generally packed with round cells of the large mononuclear and lymphocyte types.

Congestion and cellular infiltration of the portal tracts were the main features of the microscopic picture.

Gall-Bladder and Pancreas.

No abnormalities of the gall-bladder were noted. Thick, dark bile was almost always present. The pancreas was normal.

The Spleen.

The spleen was always enlarged, usually to about three times the normal size, and weighed about sixteen ounces (450 grammes). A fine fibrinous perisplenitis was sometimes seen, and small infarcts were present in four cases. The cut surface was dark red in colour; rarely was any of the white pulp distinguished. The pulp was soft and very friable, but the spleen retained its shape when cut. Microscopically, although the spleen was undoubtedly congested, the accumulation of erythrocytes within the sinusoids was overshadowed by the proliferation of the reticular and littoral cells.

The normal splenic structure of lymph follicles with active germinal centres surrounded by red pulp was lost. Large and swollen reticulum cells, macrophages, large mononuclear cells, plasma cells and small and large lymphocytes were diffusely mixed with erythrocytes, and overran the ill-defined blood sinusoids. A few multinucleate cells were seen, and active mitosis was occasionally noticed.

The normal lymphoid tissue was reduced to a mere cuff of small lymphocytes around the sheathed arteries and a thin sleeve covering the trabeculae. In several sections pronounced vasculitis was present, a feature being the collection of round cells beneath the endothelium of the veins, several rows deep. Variation in the number of large rounded cells beneath the endothelium sometimes gave an irregular "bushy" appearance to the lining coat of the vein as it indented the lumen. At times the endothelial surface was ill-defined and a mass of typical cells appeared to well out into the lumen and entangle erythrocytes. These round cells, small and large, invaded only the outer coat of the arteries, whose endothelium, however, was quite prominent.

In three of the twelve spleens from which sections were prepared there was a peculiar necrosis in the lymphoid tissue around the sheathed arteries. In one case the centres of most of these lymphoid nodes were affected. The lesion consisted of a mass of about a dozen reticular or epithelioid cells, with a good deal of eosinophilic protoplasm of indefinite outline at the centre. Amongst these cells were many pyknotic and fragmented nuclei. The pyknosis and karyorrhexis were most pronounced at the border of the surrounding lymphocytic zone, which appeared to be normal.

In another case the necrosis was more extensive, only a narrow rim of lymphocytes demarcating the lymphoid tissue from the pulp. In the pale staining area within this shell the necrotic cells were dispersed by a diffuse haemorrhage. Similar but more varied and larger areas of necrosis were found in a third case, these in fact being infarcts of the lymphoid tissue about the sheathed arteries.

One spleen, in a case associated with gross purpuric symptoms, measured fourteen inches by seven inches by four inches. There was a large tear in the capsule at the level of the costal margin, revealing a massive subcapsular haemorrhage of one to one and a half inches of thick blood clot lying on the convex surface. There was much blood in the peritoneal cavity.

The Suprarenal Bodies.

The suprarenals varied in size and in the width of the cortical and medullary tissue, in the amount of pigment in the cortex and in the depth of its colour. Usually the inner portion of the cortex was congested. Microscopically, apart from congestion of the medulla and *zona reticularis*, these areas were at times infiltrated by small round cells, and a few mononuclear and polymorphonuclear cells were occasionally present.

In one case only had haemorrhage into the gland occurred; in this case broad perpendicular streaks of haemorrhage extended throughout the length of the gland in the medial half of the cortex. The surrounding cells of the *zona columnaris* and *zona reticularis* were necrotic. Two large thrombi were seen in the veins in the medulla, one somewhat older than the other. The capillaries of the *zona reticularis* were intensely congested.

The Kidneys.

The pale and swollen cortex of the kidneys was in sharp contrast to the compact medulla, and a line of intense congestion just within the outer edge of the pyramids accentuated the difference. It was common to find petechial haemorrhages in the mucosa of the renal pelvis, although they were not always present. Sometimes these were pronounced in the calyces.

In the case associated with purpura, the pelvis, calyces and ureter on both sides were lined with blood clot, and extravasation of blood had occurred into the retroperitoneal tissue along the course of the ureter.

Histological changes in the glomeruli were not pronounced. Tubular degeneration was common and in some cases marked, but it was difficult to decide to what extent it was due to post-mortem change.

Generally, the cells of the secretory tubules presented a ragged outline, with amorphous debris in the centre of the lumen. In the most severely affected specimens the epithelium of the collecting tubules fell irregularly from its basement membrane.

Vascular engorgement of the outer portion of the medulla was the rule. Frequently the capillaries in the cortex and the glomeruli were also dilated. At times congested interlobular arteries were prominent. Haemorrhage into the glomeruli and tubules was seen only twice. The tubules of the pyramids were sometimes separated by oedema. Large mononuclear and small round-cell infiltrations were common in the connective tissue of the medulla, but were not often seen in the cortex. Evidence of previous renal damage was found in two of the sixteen kidneys from which sections were made; it was minimal in amount, and in one case could be fairly definitely diagnosed as an old glomerulonephritis.

The Bladder.

The bladder was sometimes distended with clear urine. The mucosa was usually pale, but when tidal drainage had been used it was injected.

The Testes.

In one-third of the cases there was some clear straw-coloured fluid, two or three cubic centimetres in amount, between the two layers of the *tunica vaginalis*. A thread of fibrin was often present. Smears from this fibrin and from the surface of the testis were stained by Giemsa's method. Intracellular particles were sometimes found, but they could not with certainty be diagnosed as rickettsial bodies. Smears from the surface of the lung and of the heart showed similar appearances.

Summary.

The main changes found in the body following fatal infection with scrub typhus were a proliferation of reticulo-endothelial tissues, and the production of large numbers of mononuclear cells, large and small lymphocytes and macrophages, and some plasma cells. Most organs were infiltrated by these cells, which were found mainly in the interstitial or connective tissues.

The heart and lungs appeared to be most affected by this infiltration. The cardiac changes, with separation of the individual muscle fibres, were in some cases pronounced. The lung congestion and capillary damage, with consequent hæmorrhage and production of "heart-failure" cells, were associated with consolidation. The lung condition was sometimes further complicated by the superimposition of acute bronchopneumonia.

The liver was congested, and little fatty degeneration was present. Toxic changes were pronounced in the kidneys, where tubular damage was a feature.

The cellular proliferation throughout the splenic pulp caused consistent enlargement of the organ. In a number of cases there were striking and peculiar areas of necrosis of the lymphoid tissue above the sheathed arteries.

Vasculitis was prominent in the spleen, but not so pronounced in other organs. There was a general swelling of the capillary endothelium throughout the body.

There was little evidence that failure of the vital centres of the brain was the immediate cause of death.

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"CRUDE PENICILLIN" THERAPY.

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THE extreme scarcity of the purified sodium or calcium salts of penicillin, especially for civilian use, and the fact that it would not be available in any quantity for some time, led to a series of observations, commencing in November, 1943, on the use of crude culture filtrate (metabolism solution) in the treatment, mainly of local infections, but also of some cases of general infection in man. The earlier cases were selected more or less at random and lack the advantage of controls and even in some cases of detailed pathological and bacteriological examination. With these limitations in mind, we record them in the hope that others will be encouraged to conduct more careful trials so that an appreciable body of evidence may be accumulated.

The potential presence of "pyrogens" in such a preparation is well recognized. Tests conducted on uninoculated medium according to the method recommended by the United States Pharmacopœia, twelfth edition, November, 1942, page 607, showed that the medium, provided it is prepared with pyrogen-free distilled water, exerts no significant pyrogenic action. The "crude penicillin" prepared from this medium, however, was found to be slightly pyrogenic, producing an average temperature rise of 1.6° F. in five rabbits. In view of these findings, we have not felt justified in introducing the material parenterally except in cases in which death seemed imminent. This knowledge introduces a twofold complication into the few cases on which observations have been made, namely, (a) that only the most severely ill patients have been treated, an undue strain being thus placed on the capabilities of the preparation; and (b) that in two cases in which a febrile reaction has occurred following its use, it has not been possible to decide whether the pyrexia was the result of the drug, or was merely an agonal effect. It will be observed, however, that in the other cases intravenous injection of quite large doses was not followed by any untoward effects, and, moreover, that recovery took place when all other measures had signally failed to produce any alteration in the progress of the infection.

Since the compilation of these protocols began, larger quantities of pure penicillin are becoming available for

parenteral use, but we still believe that the crude product provides a cheap, effective and powerful weapon for local infections, especially those of staphylococcal or streptococcal origin, in which the drug could not be used extensively for economic reasons.

The advantage of the crude filtrate is that it can be prepared with a minimum of trouble in any modern bacteriological laboratory. All hospitals should be able to maintain a continuous supply, for, although no accurate estimation of the biological unitage has been possible under the existing conditions, our method of titration against a coagulase positive strain of *Staphylococcus aureus*, described below, shows that little, if any, loss of potency of the metabolism solution held at -4° C. occurs within seven to ten days. Alston,⁽¹⁾ using the more accurate Oxford method of titration against a known specimen of calcium salt of penicillin, found that the filtrates prepared by him did not lose strength when kept at 4° F. for seven days nor when heated to 65° C. for two and a half hours. Other workers have found some variation in the unitage of crude filtrates; for example, Abraham, Chain *et alii*,⁽²⁾ one to two units per millilitre; Alston,⁽¹⁾ seven to ten units per millilitre. It is possible that Alston's higher figure is associated with the addition to his medium of 2.5% of a 10% solution of calcium carbonate, following the report (Challinor and MacNaughtan⁽³⁾) of increased yields of penicillin in the presence of this salt. However, inasmuch as we have found that samples prepared as set out above vary little in their antibacterial titre, and as their principal application will undoubtedly be as local dressings, the exact unitage is perhaps of no great practical moment.

It is worthy of notice, again from the practical viewpoint, that lack of success with penicillin therapy is often due to the presence of Gram-negative rods, such as *Proteus vulgaris* and *Pseudomonas pyocyanea*, which are not susceptible to penicillin. The combined use of penicillin and 2-7 diamino-acridine, Albert,⁽⁴⁾ which is the most effective substance on the market against Gram-negative bacilli and which is now available in this country (Glaxo Laboratories, Melbourne), is, therefore, to be recommended. Alston⁽¹⁾ reports that *Pseudomonas pyocyanea* may be controlled also with 4% boric acid without inhibiting healing.

Antibiotics of Fungal Origin.

It is a popular misconception that any species of blue-green mould, such as those found on bread, moist leather, or decaying organic matter, will produce penicillin, and, therefore, that anyone may make a crude penicillin poultice in the home by simply exposing a suitable food-stuff, for example, cornflour gruel, to the air and allowing it to become "mouldy". This, of course, is far from true; unless, by merest chance, the mould developing happened to be *Penicillium notatum*. However, since the discovery of penicillin by Fleming⁽⁵⁾ and its leap to prominence as a chemotherapeutic agent in more recent years, a great deal of attention has been paid to the possible production of antibacterial substances by a wide variety of other moulds. We now know that *Penicillium notatum* produces, in addition to penicillin, "penatin" (Kochalaty⁽⁶⁾) and "notatin" (Coulthard *et alii*⁽⁷⁾), while Atkinson⁽⁸⁾ has shown that a number of strains of the genus *Penicillium*, described as "Group 2", produce "penicidin". All these substances possess a specific antibacterial action varying somewhat from that of penicillin itself. From the few results available, it would appear, moreover, that different strains of *Penicillium notatum* vary in their ability to produce these different antibacterial substances.

Investigation of other moulds is still in its infancy, but already from *Penicillium patulum* has been isolated "patulin", for which hopes are held that it will exert an important influence in the treatment of the common cold (Raistrick *et alii*⁽⁹⁾), and from another genus, *Aspergillus*, have been isolated "fumagacin", "clavacin" and "aspergillin". Recent American reports mention the isolation of a new antibacterial substance, "chlorellin", from an alga, and it is understood that Russian workers claim to have discovered an antibacterial substance in onions. It is abundantly clear that we may expect enormous strides in this new field in the future.

The Preparation of Crude Penicillin.

In our work the culture of *Penicillium notatum* used was derived from Fleming's original strain, now maintained in the National Collection of Type Cultures at the Lister Institute, London, and was secured by the courtesy of Miss Nancy Atkinson.

Medium.

The medium used in early work was the modification of the Czapek-Dox medium described by Clutterbuck, Lovell and Raistrick.⁽¹⁾ This was abandoned in favour of the modification of Challinor and MacNaughtan,⁽²⁾ which is strongly buffered to control pH fluctuations during incubation, and, therefore, gives a much greater yield of penicillin per unit volume. Its formula is as follows:

NaNO ₃	3.0 grammes
KCl	0.5 gramme
MgSO ₄ .7H ₂ O	0.5 gramme
FeSO ₄ .7H ₂ O	0.01 gramme
KH ₂ PO ₄	6.5 grammes
Na ₂ HPO ₄ .12H ₂ O	33.5 grammes
Glucose (A.R.)	40.0 grammes
¹ Yeast extract	100 millilitres
Distilled water	to 1,000 millilitres

The ingredients are added in the order mentioned and steamed to dissolve, the pH is adjusted to 7.4 if necessary, and the solution is distributed in flasks to a depth of not more than two centimetres. Sterilization is effected by tyndallization, that is, steaming for thirty minutes at 100° C. on three successive days.

A continuous supply of crude penicillin is maintained by sowing cultures every few days, depending on the demand, using as inoculum a loopful of mycelium and spores. Flasks are incubated at room temperature (22° C. to 26° C. in Queensland); but a constant temperature of 24° C. is preferable. Within forty-eight hours, islands of whitish mycelium from three to five millimetres in circumference are seen floating on the surface of the medium. These coalesce to form a thick, felted pellicle which rapidly becomes covered with a dark green layer as sporing elements form. The medium itself, if undisturbed during incubation, remains clear. The maximum yield of penicillin is reached by about the tenth day.

When the metabolism solution is decanted, if fresh medium is now run into the flask, the heavy pellicle continues to thrive, producing a high concentration of penicillin in five to six days. In this way production time can be considerably shortened. It is imperative, however, that contamination be avoided, as *Bacillus coli*, certain other Gram-negative and also certain Gram-positive organisms insensitive to, or only partly sensitive to penicillin, have been shown to produce a "penicillinase" capable of inactivating penicillin (Abraham and Chain⁽³⁾). It is important, too, that each batch be titrated as a check against lowered production of penicillin by the strain of *Penicillium notatum* in use (Foster *et alii*⁽⁴⁾).

Treatment of Metabolism Solution.

The amber-coloured solution is simply filtered through paper pulp in a Buchner funnel, and in this form it can be applied directly. If, however, it is intended for intravenous injection we have adopted the practice of sterilizing the solution by filtration through an L3 or equivalent candle or a Seitz EK asbestos pad. It is then titrated. In either case the filtrate may be stored for not more than seven to ten days in sterile flasks at 4° C.

Growth of the fungus has been observed in some unfiltered batches at this temperature, but this is probably not a disadvantage for local application.

Titration.

Each batch of filtrate is roughly titrated in terms of the highest dilution capable of inhibiting the growth of a coagulase positive strain of *Staphylococcus aureus* in Hedley Wright's nutrient broth. The dilutions of the

filtrate are made in the broth, and to one millilitre of each dilution is added a standard loopful (circa 1/200 millilitres) of an eighteen hour broth culture of the test organism. The results are recorded in terms of the highest dilution showing appreciably less visible growth than the control tube in eighteen to twenty-four hours at 37° C.

Results of Treatment.

The histories of patients treated have not been included. A short summary of results is published in their place. The cases fall into two groups.

Group 1: Local Application of Crude Penicillin.

The types of lesion considered suitable for local treatment have included chronic osteomyelitis, infected burns, infected abrasions, cellulitis, impetigo, abscesses, and certain other cases of low-grade infections. The penicillin is used partly with the object of bringing the primary infecting organism under control, and partly with the object of preventing secondary infection of the wound. Those who have had experience in nursing children will realize how difficult it is to prevent mixed infections developing unless some antiseptic dressing is used; yet there are relatively few antiseptics that can be used continually without a delay in healing.

The usual method of applying the penicillin has been to pack the wound lightly with gauze soaked in the crude solution, covered with jaconet to check evaporation. A few cubic centimetres of fresh solution are added every four hours to keep the packing moist, generally by means of a hypodermic syringe so that there should be a minimal disturbance of the dressing. Alston,⁽⁵⁾ however, reports that applications at less frequent intervals, namely, twice a day at first, after a few days once a day, and then less frequently, are successful.

The results of this method of dressing infected wounds are proving most satisfactory. In the absence of detailed bacteriological controls, no figures can be produced, but the impression gained has been that dirty wounds, with superficial infection of various kinds, have healed more quickly than before. Results in chronic osteomyelitis cases have been particularly pleasing. It is not presumed that the penicillin solution reaches all the staphylococci in the interstices of the bone, but undoubtedly it keeps in check the secondary infection which so often develops.

Cellulitis.—Two patients, aged six years, suffering from cellulitis were treated. *Streptococcus pyogenes* and *Staphylococcus aureus* were isolated. One gramme of sulphathiazole was given and filtrate of penicillin applied on cotton wool twice a day. Response was immediate and the lesions were healed in three days.

Osteomyelitis.—Seven patients with osteomyelitis were treated. All were seven years of age or less, except one who was forty-six years of age. In this case an associated fracture of the crest of the ilium was present. In the other cases the tibia, ilium or humerus was involved. In five cases *Staphylococcus aureus* was isolated; in two cases the organism was not isolated. The penicillin was applied on gauze or was sprayed onto the affected area. Response was satisfactory.

Infections.—Infections of fingers, of abrasions of a wound of the foot and of burns (seven cases) were treated with penicillin. The identity of the organism was not always determined. In the case of burns *Staphylococcus aureus* was isolated. Crude penicillin was applied with satisfactory results. In another case an infection of the cervix was present and *Staphylococcus albus* and *Monilia (Mycotorula) albicans* were isolated. Applications of crude penicillin were followed by a reduction in the number of staphylococci, but had no effect on the monilia. The condition reverted to its original state.

Abscesses.—Three patients with abscesses were treated. In two instances the lesion was packed with penicillin gauze and in one an irrigation with crude penicillin was carried out thrice daily. The response was satisfactory.

Impetigo.—In one case of impetigo no organism was isolated. A dressing of crude penicillin was used every four hours for eleven days when the patient was discharged from hospital.

Carbuncle.—Crude penicillin was used in a carbuncle of the left knee. The organism was not determined. Penicillin

¹ As this is unobtainable, we have successfully substituted a 0.2% solution of "Vegemite".

was injected into the sinuses. Later openings were made for drainage and penicillin was applied on dressings. Recovery occurred in a week.

Ulcers.—In two cases of ulcer of the leg dressings of crude penicillin were effective.

Pilonidal Sinus.—A recurrent sinus after resection of a pilonidal sinus healed rapidly on application of penicillin.

Group 2: Parenteral Administration of Crude Penicillin.

The mode of administration by the intravenous route has varied somewhat from case to case. In the early stages, caution was the keynote; but later it was found that quite rapid administration was tolerated well.

Osteomyelitis.—A male patient, aged seven years, a patient of Dr. A. G. Avery, suffered from osteomyelitis of the ilium. The organism was not determined. A swelling over the ilium behind the anterior superior spine was opened under general anaesthesia. Pus was evacuated and a spinal spica was applied. The patient was very ill. On the twenty-eighth day 250 millilitres of crude penicillin were given intravenously. The dose was repeated on the following day. On the thirtieth day the child's temperature was normal. Later on the condition relapsed, and on the forty-fourth day extensive osteomyelitis was found to involve the whole of the ilium including the acetabulum. A quiescent "healed" area was also discovered on the mesial side of the lower femoral epiphysis. On the following day a Thomas splint was applied with extension. From then onward progress was made.

It was not clear whether the rapid fall in temperature was due wholly or in part to the penicillin or due partly to the immobilization of the knee; it certainly appeared, however, as though the drug had a very beneficial action.

Appendicitis and Peritonitis.—A male baby, aged three years and ten months, the patient of Dr. L. Atkinson, suffered from appendicitis and peritonitis. The identity of the organism was not determined. At operation the appendix was found to be gangrenous and perforated; free pus was present and the tip of the appendix was situated under the right lobe of the liver. Although sulphanilamide powder was used in the right paracolic gutter and in the wound, the child's general condition deteriorated and became desperate. Crude penicillin was given by the intravenous drip method in doses of 300 millilitres every day for four days. Improvement was immediate. Later on an abscess formed in the right paracolic gutter and was opened. Otherwise recovery was uneventful.

Septic Embolic Pneumonia with Suppurative Cellulitis of the Buttock.—A married woman, a patient of Dr. Lloyd Simmonds, suffered from septic embolic pneumonia with suppurative cellulitis of the buttock of three weeks' duration. The identity of the organism was not determined. Crude penicillin was given in doses of 500 and 300 millilitres by intravenous injection on successive days. The response was immediate and the patient was out of bed in ten days after this second dose of penicillin.

Osteomyelitis of the Pubis and Ischium with Sinus into the Bladder.—A boy, aged nine years, a patient of Dr. H. Crawford, suffered from severe osteomyelitis of the pubis and ischium with a sinus into the bladder. The condition was of three years' duration and the causative organism was *Staphylococcus aureus*. Crude penicillin was given intravenously in a dose of 300 millilitres over a period of two and a half hours. The dose was repeated on the following day. The temperature became normal. The child's condition improved. At the end of the second month crude penicillin was injected into the bladder and sinus. This was repeated for a week, when the urine was clear and the wound healed. Progress continued to be good.

Staphylococcus Aureus Septicæmia.—A married woman, aged forty-two years, a patient of Dr. M. Geaney, suffered from *Staphylococcus aureus* septicæmia. The clinical history of this patient was recorded in this journal in 1944.⁽¹⁾

A girl, aged five years and eight months, a patient of Dr. Felix Arden, suffered from staphylococcal septicæmia. The causative organism was *Staphylococcus aureus*. The child gave a history of severe sunburn followed by the development of a carbuncle on the right shoulder two weeks later, associated with fever and rash. Sulphapyridine, 0.5 gramme, was given every four hours. The child was admitted to hospital, and three days later her temperature was 105° F. She was very ill and had grunting respirations. Patchy dulness was present in the chest with crepitations at the bases of both lungs. The abdomen was rigid. Sulphathiazole was given by mouth and sulphapyridine was

given by the intravenous drip method. The patient was restless and vomiting; her condition was deteriorating rapidly. On the following day 200 millilitres of crude penicillin were given intravenously. The temperature was then 104° F.; in two hours it had risen to 106° F., and in four hours was down to 98° F. The patient died nine hours after the administration of crude penicillin. A post-mortem examination revealed a carbuncle of the right shoulder, bilateral fibrinous pleurisy, miliary abscesses in the lungs, excess pericardial fluid, and five ounces of turbid, yellow fluid in the peritoneal cavity. The spleen was twice normal size; three small abscesses were found in the left kidney. *Staphylococcus aureus* was found in the carbuncle and lung abscesses.

This case was rather a severe test of the efficacy of crude penicillin. The temperature rose immediately after the administration of a relatively small dose; but, in view of the experience in previous cases, this was probably not due to pyrogens in the preparation.

A female baby, aged one year and nine months, a patient of Dr. Felix Arden, suffered from *Staphylococcus aureus* septicæmia. There was a history of diarrhoea for one week; the temperature was 103° F.; the baby was not very ill. Sulphathiazole was given. Gangrene was spreading up the right leg; the patient was vomiting and was given an intravenous drip of sulphathiazole. *Staphylococcus aureus* was grown from the blood. The child was moribund. Two hundred and twenty millilitres of crude penicillin were added to the drip; fifty millilitres were run in quickly, and the remainder at 25 to 30 millilitres per hour. The patient died.

Post-mortem examination revealed gangrene and miliary foci of suppuration in the right foot. The trachea and upper bronchi were very inflamed; fibrino-purulent pericarditis was present. Acute enteritis was also present.

The comment that was made for the previous case holds equally for this.

Summary and Conclusions.

1. In this paper are recorded the results of the use of crude penicillin (culture filtrate) in 32 cases of local and general infection. These are divided into two groups, in the former of which (25 cases) the filtrate was applied locally, while in the latter (seven cases) the intravenous route was employed. The one recalcitrant case in the local infection series (Case IV) was a combined *Staphylococcus albus* and *Monilia* (Mycotorula) infection. The latter organism was not inhibited by penicillin.

2. Owing to wartime difficulties, including serious staff shortages, no bacteriological records are available for many of the cases; but, in most of those examined, staphylococcal or streptococcal infections, or mixtures of the two organisms, were found. In view of the success attending the treatment, it is assumed tentatively that one or other of these organisms was responsible for most of the other cases, and this assumption is supported by the clinical picture in many instances.

3. Although the filtrate was found to be somewhat pyrogenic for rabbits, it was considered that, in the absence of pure penicillin for civilian use at the time, it was advisable to administer the filtrate parenterally in certain cases in which the prognosis was grave. This conclusion was justified by the results in a majority of the cases, in which not only did the patients recover, but they showed no untoward symptoms from the filtrate itself. In the two cases in which death ensued, the patients were moribund at the commencement of penicillin therapy.

4. One point of particular interest is the success attending the parenteral administration of doses of filtrate in which the Oxford unitage, based on the findings of several workers, varied from approximately 1,000, on the one hand, to 24,000 on the other. This is surprising in the light of recommendations of one million units of pure penicillin for parenteral administration and the stress placed on the necessity for maintaining a constant level of penicillin in the circulation. There is little doubt, however, that higher doses would have been more rapidly successful had our existing facilities been able to keep pace with the demand and had we not felt obliged to exercise considerable caution in determining dosage in the early stages.

5. Although pure penicillin is becoming available slowly for civilian use, it is believed that crude penicillin will

continue to play an important role in the treatment of local infections caused by Gram-positive pyogenic bacteria, for it can be produced in any hospital laboratory by a skilled technician at negligible cost and with a minimum of labour.

6. While this paper was in the course of preparation, Alston⁽⁴⁾ published a report on a series of patients treated by local application, confirming our findings and commending the use of the crude filtrate.

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Reports of Cases.

MASSIVE ENLARGEMENT OF THE THYROID GLAND.

By RICHARD FLYNN,
Sydney.

Clinical Record.

W.O.N., a male, aged fifty-three years, was a patient in Lewisham Hospital under my care. He sought medical treatment because of a large swelling in his neck. His history was that twenty-five years previously he had noticed two small lumps, one on each side of the middle line of the neck anteriorly. The lumps had enlarged slowly without causing any symptoms. He stated that he had experienced no difficulty in breathing even on exertion, or in swallowing. He had not noticed nor had his friends noticed any change in the tone of his voice. No symptoms were present to suggest that the goitre was at all hyperactive (for example, tachycardia).

On examination, the swelling was seen to be a massively enlarged thyroid gland. The swelling was irregular in contour, but was sharply demarcated from the surrounding structures. Both sterno-mastoid muscles were displaced back-



FIGURE I.

wards by it. The swelling was rubbery hard in consistence, and nowhere was it cystic, nor was it tender. There were a number of large veins coursing over it. No enlarged lymphatic glands were associated with it. It moved upwards when the patient swallowed. The left lobe was larger than the right (Figures I and II). The general physical examination otherwise gave essentially negative results.



FIGURE II.

The radiologist reported that a lateral skiagram of the neck (Figure III) showed a very large tumour lying anterior to the spine containing many large areas of calcification and extending down into the superior part of the mediastinum. The appearances were indicative of a large goitre with a retrosternal extension. A large retrotracheal extension was

also present. An electrocardiogram was interpreted as showing delayed intraventricular conduction and myocarditis.

On account of its size, particularly of its retrosternal extension, and because of the electrocardiographic findings, I decided to remove the swelling under regional anaesthesia. On December 12, 1938, under regional anaesthesia with a 1% solution of "Novocain", I performed a total thyroidec-



FIGURE III.

tomy. On account of the large amount of calcification in the gland substance, total thyroidectomy was technically considerably easier than an attempted partial thyroidectomy. During operation it was interesting to note that the common carotid artery on both sides was flattened into a ribbon-like structure between the cervical vertebrae behind and the enlarged thyroid in front. The patient experienced no pain or discomfort during the operation, and within an hour after the operation when I visited him he told me that it was the first time for many years that he had been able to take in "a decent breath". Convalescence was uneventful. An electrocardiogram made after the operation showed no change from that made before operation. The patient was discharged from hospital and returned home to Longreach, Queensland, on January 7, 1939. He was advised to take thyroid tablets regularly during the remainder of his life.

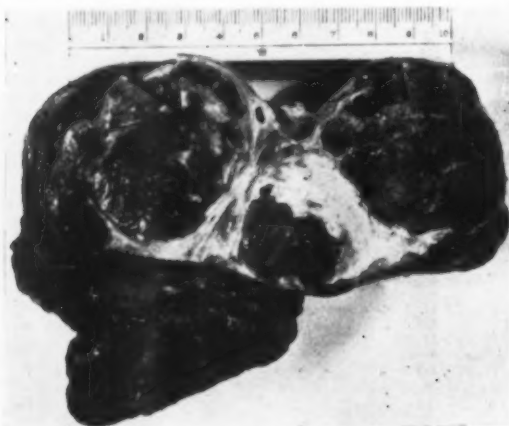


FIGURE IV.

Pathological Findings.

The pathological report on the tumour by Dr. A. J. Canny was as follows:

Macroscopic.—The specimen consisted of a coarsely lobulated mass measuring 15.7 cm. by 9.0 cm. in its maximum diameters. It was incompletely divided into two major portions by a broad transverse depression. The larger of these sub-divisions was disposed around a central groove about 2.5 cm. in diameter which it

almost completely surrounded. The smaller portion measured 8.2 cm. by 5.7 cm. by 6.0 cm. A fibrous capsule enclosed the whole. The weight of the whole mass was 810 gms. A median section exposed a number of circumscribed roughly circular zones of tissue containing many large colloid filled vesicles discoloured by hemorrhage. These zones were separated by broad strands of fibrous tissue in which patches of calcification were present. The appearances were characteristic of a nodular colloid goitre (Figure IV).

Microscopic.—The sections are composed of thyroid tissue in which many of the acini are grossly increased in size. There is much colloid in all the acini, and for the most part this is moderately eosinophilic and free from marginal vacuolation. All the epithelium in the section examined is of a low cubical or flattened type. Between the thyroid acini a diffuse fibrosis has occurred. In parts broad strands of dense fibrous tissue are present. Some of this has undergone hyaline change and in parts calcium salts have been deposited. Atrophic acini and epithelial cells without definite acinar arrangement are to be found in the connective tissue framework of the gland. Localised areas of mucoid degeneration in the collagen and numerous small scattered hemorrhages are to be seen. Many thin walled dilated blood vessels occur particularly near the hemorrhagic areas. The histological appearances are those seen in colloid goitres of considerable duration.

Acknowledgements.

I wish to acknowledge my indebtedness to Dr. H. C. Spencer for Figures I and II, and to Mr. Woodward Smith, of the Medical Artistry Department, University of Sydney, for Figure IV, used in this report.

Notes on Books, Current Journals and New Appliances.

SOME VIEWS ON EDUCATION.

BISHOP E. H. BURGMANN'S provocative booklet "The Education of an Australian" is devoted to the aims of an educational system in this continent, together with some interesting reminiscences of the author's boyhood in "the bush" and in the city.¹ The main theme is that the home is the most important educational institution and the parents the most important teachers, and therefore the parents must be trained for this duty. Next in importance the author places country boarding schools as providing a means of weaning boys and girls from the family into the larger world, and of making them acquainted with the "soil" of their native land. He urges the need for schools to take a larger share in community life, and for libraries that will keep adults in touch with advances in knowledge and educational methods. As regards sex, scientific books should be available to boys and girls where they may be consulted without fear of shame. The author thinks that children at present are liable to be over-taught and should be given more opportunities to acquire knowledge for themselves; in the boarding schools practical handicraft instruction should be given in order to find out the bent of each child, before a decision is made on the vocation to be followed through life. The need for understanding and a knowledge of child psychology in teachers is stressed, because it is important to be able to "resolve a child's fears in the primary school". As in the case of some of the author's public pronouncements there is a blemish in the tendency to disparage other groups, especially those engaged in business and commerce. However, we must agree that education does not consist of buildings and elaborate organization; it is a matter of finding the best teachers. In view of the author's affiliations one is surprised to read that a government department is not likely to make a success of the organization of educational activities. The need for universal teaching of religious history free from any dominational bias is essential to give children an introduction to one of the most important formative elements of Western civilization. The booklet makes interesting reading, and its chief lack is that of practical suggestions as to the carrying out of the good aims and ideals propounded.

¹ "The Education of an Australian", by E. H. Burgmann, M.A., Th.Soc.; 1944. Sydney: Angus and Robertson Limited. 81" x 54", pp. 101. Price: 2s. 6d.

The Medical Journal of Australia

SATURDAY, JANUARY 20, 1945.

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THE MEDICAL STUDENT: HIS SELECTION, HIS NEEDS AND HIS DESTINY.

THE last few decades have seen great changes in the conditions surrounding the admission of students to the medical schools of Australian universities. Not so long ago very few scholarships, bursaries or exhibitions were available to Australian undergraduates in medicine. The calling of medicine was confined almost exclusively to the sons and daughters (the daughters were few in number) of parents who could afford to pay the fees covering the five years' course and also to meet the student's cost of living for that period. The few determined and heroic souls who managed by dint of hard work, self-sacrifice and deprivation to earn enough to pay their own way through the medical course were probably not more numerous than those for whom scholarships and other monetary awards could be found. The present-day tendency began with the provision of bursaries or "free places" and is being extended by the provision of living allowances. This arrangement is much to be commended. It is in keeping with the ideals of democracy that all the adolescent members of the community shall enjoy equal opportunities of fitting themselves for the life's work of their choice. Incidentally, it removes the long-standing reproach to medicine, that it was likely to be deprived of the best brains in the community if their possessors or the parents were not people of a certain amount of substance. The war with its problems of man power for the fighting forces and for the home services brought complications, and it became clear that a limit would have to be set to the number of students who might enter the faculty of medicine (this applied to other faculties as well, though they do not concern us at the moment). Limitation of numbers meant that some method of selection would have to be devised, and indeed some letters have been published on that subject in the

correspondence columns of this journal. It is sometimes forgotten that the exigencies of war only speeded up the urgency of the problems of limitation and selection. With the removal of financial barriers from the entrance to the field of medicine numbers were bound to increase considerably, and medical schools are not equipped to accommodate an unlimited number of students, even if the community can absorb an unlimited number of medical practitioners, which does not seem likely. We may therefore conclude that limitation of numbers and some form of selection of students have come to stay.

The sensible attitude that has brought about these changes—for in this matter the community has shown its common sense—it not confined to Australia. Those who look on the changed conditions with disapproval, if there are such people, should be reminded of two recently published documents reflecting English thought on this subject. One of these, though not the first to appear, is what is known as the Goodenough Report. It was drawn up by the Interdepartmental Committee on Medical Schools under the chairmanship of Sir William Goodenough and was published by the Ministry of Health and the Department of Health for Scotland. A summary appeared in the *British Medical Journal* of July 22, 1944. Apparently medical students in England and Wales are not recruited from so wide a field as in Scotland, where students come from all classes of the community. This is said to be due chiefly to a misconception on the part of parents of the amount of financial help that may be obtained towards the cost of medical education, and to a lack of encouragement to secondary school pupils to take up medicine as a career. The committee recommends that grants to medical students should be adequate and should extend over the whole period of training. Medical schools, it is held, should have larger funds at their disposal to help students and even to encourage graduates in other faculties to study medicine. The committee believes that the selection of students should not be based on examination results alone. Students should be interviewed before they are accepted and selection should be supplemented by a weeding out as early as possible of those who prove unsuitable. The other document is the report of the planning committee of the Royal College of Physicians of London. (See the *British Medical Journal* of May 13, 1944). This committee points out that at present only about one third of the cost of university education is recovered in students' fees; the remainder is provided by the State, by local authorities and by endowments. When, therefore, the committee advocates the making of all university education entirely free, as it does, it claims that the step would not be very revolutionary. The committee holds that free university education would be a more satisfactory method of widening the field of selection than the giving of more scholarships, and it also recommends that maintenance grants should be provided for those students who need them. The reasons given for this opinion are important in view of ideas and practices that have been adopted in Australia. The first reason is that specialized competitive examinations for scholarships tend to dominate the later school years, with unfortunate effects on general education. The second is that many scholarships are at present awarded by bodies other than universities. The result is that scholars whom the universities in Britain are forced to accept are

often "lacking in character and cultural background and prove disappointing". Selection in the opinion of the committee should be in the hands of the universities. The College of Physicians committee, like the Interdepartmental Committee on Medical Schools, holds that selection should not be based on examination results alone—in addition to academic ability, character and personality should be considered. The committee states, and no one who knows anything about the practice of medicine will deny the truth of the statement, that in this matter character is in general not less important than ability. Persons with a high moral character, gifted with both academic ability and a sense of responsibility, are to be found in every stratum of society. Under the conditions to which these English committees are directing thought and activity, university education would indeed "remain a privilege, but it would become more the privilege of character and ability and less the privilege of wealth". Thus if our first conclusion, to be appreciated by those who wish to enter the ranks of medicine, is that limitation of numbers of students and some form of selection have come to stay, our second, to be learned by those responsible for limitation and selection, is that the criteria must include something more than ability to pass examinations.

To discuss the needs of the student embarking on the study of medicine raises the whole question of the medical curriculum, a subject on which long theses might be written. When we speak of the student's needs we do not, or should not, have in mind his passing of the qualifying examination as the be-all and end-all of the student's career. The student's course of study at the medical school must be conducted in the light of his future destiny. To think only of the immediate examination results is to lay a foundation for opportunism and time service that will be most difficult to eradicate in later years when experience should ripen into judgement and knowledge into wisdom. The student's needs may be considered from two points of view—the mental equipment that he brings to his task and the kind of teaching that he receives in the medical school. The student embarking on a medical course should at least have an alert mind and know what mental concentration and study mean. More than this, he should have a certain cultural background, for without it he will not be able to reach the fullness of stature that should characterize a member of a learned profession who is not dominated by commercial instincts. In this connexion it is possible to see the unwisdom of a burdening of the school years with too much of the pure sciences at the expense of the study of history, English, other modern languages, the classics and so on. These considerations argue for the elimination of competitive examinations for scholarships to enable a student to enter the medical faculty. The kind of teaching that a student receives will depend on whether the teacher knows how to teach even more perhaps than on the subject entrusted to him. First of all a decision has to be made on what the student is to be taught, and then suitable teachers have to be found. Some of the defects in the present method are well stated by the planning committee of the Royal College of Physicians. We read in the report that "the average medical graduate has defects which are to be attributed chiefly to the manner of his training. He tends to lack curiosity and initiative; his powers of observation

are relatively undeveloped; his ability to arrange and interpret facts is poor; he lacks precision in the use of words. In short, his training, however satisfactory it may have been in the technical sense, has been unsatisfactory as an education. . . . The average student leaves his medical school at about the age of twenty-five; during the thirty or so years of professional life, his ability to learn from his own experience and that of others, and to keep abreast of the stream of advancing medical knowledge, depends entirely on those qualities in which his training has left him defective". To discuss this subject fully it would be necessary to deal with the several sections of the curriculum in detail. Since this is impossible in this discussion, three general principles may be stated (they are named in the College of Physicians report): improved coordination, elimination of unnecessary detail, and a just distinction between the requirements of undergraduate and post-graduate education. The first two of these would most likely be named by any medical graduate asked to discuss the subject; the third is the one most easily overlooked and the one most often neglected, especially in the later clinical years. For some reason or other it is commonly assumed that any skilled physician, surgeon or specialist in disease of the special senses is able to teach. Too often the teaching becomes a display of personal knowledge or dexterity, or if this is not the case instruction takes the place of efforts to help the student to think for himself. "The true aim of the teacher should be to impart an appreciation of method and not a knowledge of facts." On the question of detail it is quite clear that there is no need whatever for the student to be able, for example, to describe the successive steps of a surgical operation such as excision of the rectum or complete hysterectomy, but there is urgent need that he shall know every detail of the symptoms, signs and diagnostic criteria of malignant disease of the rectum or of the *cervix uteri*. When we declare that in a more advanced and more enlightened stage of our development standards will be set up for attainment by teachers of medicine, this does not apply only to those who deal with clinical medicine in the wards of a hospital. All who teach, whether in medicine or in any other subject, are among those whose labours demand renewal of inspiration from time to time. Some there may be who have a vision always before them, but those who have not must take heed lest they sink into a rut. To be in a rut and not to know it is pitiable; for a teacher in medicine so placed a stronger word must be found, for the effect on his pupils who are being trained to deal with human lives is disastrous.

Reference having been made to the selection of the student of medicine and to some of his needs, it is fitting that further reference should be made to his destiny. This has nothing to do with whether he shall be general practitioner or specialist, whether he shall engage in private practice or be a servant of the State, paid by a salary or on a fee-for-service basis. His destiny lies in the pursuit of knowledge and its use in the prevention and cure of disease, in a fervid discontent with conditions that interfere with the full development of man in all sides of his nature, in a refusal to accept the present state of knowledge on any subject as final and in the keeping of an open mind to gather what is good from what is new; he will be prepared "to visit the fatherless and the widows in

their affliction" and will not be over-careful of money; in short he will walk worthy of the high calling wherewith he has been called. Medicine in the past has held much that was glorious, much that was noble. The future can be just as noble and just as glorious in the hands of newcomers to its ranks if these newcomers are selected with care and trained with wisdom, and also—wholesome thought—if they have before them worthy examples set by others already in the profession.

Current Comment.

SULPHAGUANIDINE AND LESIONS OF THE LIVER.

SINCE P. O. Hagerman and F. G. Blake in 1937 reported, among a series of unfavourable reactions following sulphanilamide therapy, a case of liver damage,¹ similar cases have been recorded by other observers. In 1938 E. W. Cline reported a case of acute yellow atrophy of the liver in a youth of eighteen years following the administration of sulphanilamide.² Cases similar to this can be quoted. Reports of damage to the livers of infants and children have also been published. For example, M. L. Menten and M. A. Andersch in 299 autopsies performed at a children's hospital found 38 cases of liver damage associated with sulphonamide therapy.³ No definite relationship could be discovered in these cases between the amount of sulphonamide dosage and the development of liver lesions. According to F. C. Smith,⁴ the jaundice which sometimes appears following the use of sulphanilamide is usually hemolytic, but in about 0.6% of the cases in which sulphanilamide is given the jaundice is ascribed to liver damage. Smith refers to the view that in the cases of liver damage the liver has already been damaged prior to the administration of sulphanilamide and that the drug causes the damage to progress to a stage from which regeneration is impossible. Smith refers to attempts made by T. E. Machella and G. M. Higgins to test this hypothesis experimentally. Machella and Higgins published the results of their investigations in 1942.⁵ They gave sulphanilamide to a group of rats that were having hepatitis produced by the inhalation of carbon tetrachloride and found that it did not increase the damage to the liver. On the contrary it appeared to lessen the damage. Further, after hepatitis had been induced by means of carbon tetrachloride, sulphanilamide did not impede regeneration of the liver after administration of carbon tetrachloride had been discontinued. Machella and Higgins concluded that their experimental data were in accord with slowly accumulating facts which showed that when sulphanilamide and allied compounds were administered to patients whose livers had been damaged, no apparent significant increases of hepatic dysfunction occurred. At the same time they admitted that their observations shed no light on the question why, when patients received sulphanilamide, some developed hepatitis and others did not. Work which may help to explain this question has been carried out by P. Gross, A. E. Axelrod and M. D. Bosse.⁶

These observers state at the outset that profound disturbances, similar in many respects to those observed in vitamin deficiency syndromes, are produced by the administration of sulphaguanidine or sulphasuxidine to

growing rats receiving a highly purified diet. They add that many of the toxic manifestations can be prevented or cured by various dietary factors. Their report deals with lesions observed during sulphaguanidine administration and their evolution or involution under therapy. Rats maintained by them on a purified basal diet to which 0.5% or 1.0% sulphaguanidine had been added showed severe symptoms and pathological changes; these changes became maximal after two months of drug ingestion and terminated fatally in about 90% of cases. The hepatic lesions caused were similar to those reported in the literature as having been occasioned by other sulphonamides. More than one-half of the animals that were given sulphaguanidine (in addition to the basal diet and vitamin B₁) with ineffective or no treatment, showed liver lesions. These consisted of pin-head size and larger, opaque, white spots, beneath the capsule and scattered irregularly over the cut surface. Many livers, particularly those from animals on the smaller drug dosage, showed areas of necrosis which involved from 10% to 50% or more of the liver substance. Indeed in several animals no normal liver tissue could be seen. The changes in the liver seen on microscopic examination included cloudy swelling, hydropic degeneration, various types of necrosis, fatty degeneration, hepatitis, bacterial invasion and varying degrees of repair. The sole indication of inflammatory reaction was, with few exceptions, the proliferation and swelling of endothelial cells. The larger areas of necrosis were thought to be infarctions and the association of necrotic foci with vascular thrombosis supported this assumption. The explanation for the thrombotic vascular occlusions was thought to lie in the haemoconcentration incident to shock, the attendant increased viscosity of the blood, the diminished blood flow and the consequent tendency of the blood to clot. With the exception of the areas of infarction the hepatic changes were to a large extent reversible and repairable. The administration of liver or of "folic acid" concentrate and biotin reduced the mortality rate of animals suffering from the sulphaguanidine effects from 90% to 14%, and resulted in the repair of necrotic foci and in the return of degenerated hepatic tissue to normal in a considerable proportion of the animals. Emphasis is laid on the fact that none of five animals which received liver therapy from the beginning of sulphaguanidine administration showed a liver lesion.

If this work on animals was completely applicable to man and if the experimental findings with all sulphonamides were the same as those obtained with sulphaguanidine, the occurrence of hepatic damage with sulphonamide therapy would have to be attributed to a dietary deficiency of the patient. For this reason the investigations of Gross, Axelrod and Bosse are most suggestive. They state that the similarity of certain aspects of experimental hepatic lesions induced by sulphaguanidine to those encountered clinically with other sulphonamides makes it appear probable that their ætiological background is identical and that such clinically encountered hepatic lesions may be susceptible to liver or "folic acid" concentrate and biotin therapy. Since liver therapy is already being used to combat leucopenia incident to sulphonamide administration, Gross and his two collaborators think that their findings may furnish another reasonable basis for the employment of that therapy. Whether or not the prophylactic therapy described will lessen the incidence of side effects other than hepatic lesions or whether it will interfere with the effectiveness of the sulphonamides, in their opinion awaits further clinical investigations.

A final point discussed by these three investigators should be mentioned. The basic cause of focal necrosis of the liver occurring in enteric fever and in other severe infections is not known. It is highly probable that there is a severe depletion of tissue vitamins in these conditions, and it is possible that the focal necrosis of the liver may be caused by vitamin depletion induced by infection; it may be related to the necrosis produced by drugs. If this were so, hepatic necrosis secondary to infections might also be ameliorated by liver therapy. There is plenty of scope for future work along these lines.

¹The Journal of the American Medical Association, Volume CIX, 1937, page 642.

²The Journal of the American Medical Association, Volume CXI, 1938, page 2384.

³Annals of Internal Medicine, Volume XIX, 1943, page 609.

⁴F. C. Smith: "Sulphonamide Therapy in Medical Practice", 1944, page 80.

⁵The American Journal of the Medical Sciences, Volume CCIV, 1942, page 194.

⁶The American Journal of the Medical Sciences, November, 1944.

Abstracts from Medical Literature.

MEDICINE.

Epidemic Jaundice.

A. SOMERVILLE AND J. S. CLARK (*The Canadian Medical Association Journal*, August, 1944) have described an epidemic of jaundice in the Foothills Health District in Canada. Seventy-four cases occurred in a town called Royalties. Not one case occurred in Longview, a town half a mile from Royalties. Two smaller isolated epidemics of jaundice occurred at two towns, one twenty miles to the north and another to the east. The epidemics were clinically identical, but appeared completely independent of each other. In these epidemics there was no spread to other towns. In Royalties, a typical boom town with poor housing conditions, seventy-four cases occurred in thirty-three families and nineteen other cases with identical symptoms, but without jaundice, occurred in the same thirty-three families. The sanitation of the town was fairly good, pit privies were used, but as the epidemic was in winter infection borne by flies was unlikely. The schools were crowded and the houses small and close together. Sudden onset was usual with fever, anorexia, nausea, vomiting, abdominal pains and often chills. Leucocyte counts were low, and for this reason operation was avoided in several suspected abdominal surgical conditions. Jaundice appeared on the third or fourth day or later. In some cases there were few symptoms. The urine was dark and the stools light in most cases. In 69% the incubation period was between twenty and thirty-five days. It is said that the patient is infective for the first ten days of the illness. A virus infection has been suggested. The cases all occurred during the winter months. The majority of the patients were between the ages of five and fifteen years. Direct close contact seemed to be necessary for transfer of the disease. There was no evidence that milk or water supplies were factors in causation. No quarantine was attempted. Ten days' isolation was suggested.

X-Ray Sickness.

W. B. BEAN *et alii* (*The American Journal of the Medical Sciences*, July, 1944) have found from a study of the effect of administering a measured quantity of irradiation to the left side of the upper part of the abdomen that well-fed persons have little reaction to the same dose of X rays that makes persons deficient in vitamin B ill. X-ray sickness in the latter group of persons can be prevented or reduced in severity by the administration of nicotinic acid and aneurin.

Capillary Permeability in Myxœdema.

K. LANGER (*The American Journal of the Medical Sciences*, July, 1944) has described a method of estimating the capillary permeability exactly by means of a photo-electric colorimeter with which the colour of the skin is compared before and after the intravenous injection of fluorescein. He has found that the capillary permeability is much

greater than normal in persons with myxœdema, but that it rapidly returns to normal after the administration of thyroid extract. The return of the capillary permeability to normal coincided with loss of weight, abundant diuresis and return of the electrocardiogram and blood cholesterol value to normal. Increased capillary permeability was not found in persons with crural œdema due to heart failure or cirrhosis of the liver, but was found in association with the crural œdema of undernutrition or severe avitaminosis.

Thymectomy for Myasthenia Gravis.

A. BLALOCK (*The Journal of Thoracic Surgery*, August, 1944) reports the results of thymectomy in twenty patients suffering from *myasthenia gravis*. Four patients died, four no longer required prostigmin, the condition of nine was improved, and three showed no distinct improvement, although they claimed to feel better for the operation. The results suggested that the best chances of recovery are to be expected in patients who have not had the disease for very long. The author states that it is not yet possible to predict in a given case the degree of improvement which may be expected to follow the operation.

The Lung after Collapse Therapy.

R. CHARR AND J. W. SAYACOL (*Diseases of the Chest*, March-April, 1944) have examined *post mortem* the lungs of 49 persons who had undergone collapse therapy for pulmonary tuberculosis. They attribute the phenomenon of "selective collapse" to local pulmonary deflation caused by the occlusion of diseased bronchioles in the tuberculous parts of the lung. Panarteritis, leading to thrombosis and sclerosis in the tuberculous areas, was a constant finding and resulted in a considerable loss of blood supply about the chronic fibrotic cavities; this appeared to be responsible for the failure of such cavities to undergo healing even with satisfactory collapse. Vascular changes around recent cavities were minimal, the blood supply being therefore practically unimpaired. The authors suggest that collapse therapy in chronic pulmonary tuberculosis ought to be carried out before vascular and fibrotic changes are too great to permit of concentric closure of cavities and "anatomical" healing. Serious complications almost never occurred in early tuberculosis in which there was satisfactory collapse of the lesions.

Vitamin A Deficiency in the Tuberculous Diabetic.

A. L. BANYAI AND A. V. CADDEN (*Diseases of the Chest*, March-April, 1944) are led from the fact that there is frequently a state of subclinical deficiency of vitamin A in diabetes, brought about by the diminished competency of the liver to convert the carotene of the diet to vitamin A, and from the fact that there is an increased susceptibility to infection when there is an inadequate intake of food and much deficiency of vitamin A, and from the fact that tuberculosis has an untoward effect on the glycogen metabolism of the liver and consequently on vitamin A storage, to the opinion that vitamin A deficiency is one of the main causes of the increased susceptibility of the diabetic to tuberculosis. They

believe that a daily dose of 150,000 to 200,000 units of vitamin A may well serve as a useful adjunct in the treatment of pulmonary tuberculosis and particularly in the management of diabetes complicated by tuberculosis.

Disordered Physiology in Gastric and Duodenal Ulcer.

H. SHAY (*Bulletin of the New York Academy of Medicine*, May, 1944) has studied the changes in the gastric motor and secretory functions produced by gastric and duodenal ulcer. The changes caused by the former he related to the action of the lesion upon local gastric mechanisms. He also produces evidence to show that the changes in gastric function produced by duodenal ulcer are due to damage to duodenal mechanisms, the most sensitive portion of which is located in the cap, the usual site of duodenal ulcer. As a rule the mechanisms are obtunded and not destroyed by the ulcer and may recover when the ulcer heals. A return of gastric motor and secretory function to normal he believes to be probably the only reliable criterion of the healing of a duodenal ulcer. Though obtunded by the ulcer and associated duodenitis, the duodenal mechanisms in most cases of active ulcer can still respond to stimulation by fat. Upon this fact rests part of the therapeutic value of milk and cream in the sufferer's diet. An impairment of the duodenal mechanisms to such a degree that they cannot react even to fat stimulation may account for the failure of some uncomplicated duodenal ulcers to respond to treatment. The author believes that the duodenal mechanism concerned with gastric secretion is largely responsible for the diminishing gastric acidity seen in the second half of a normal fractional gastric analysis and is an expression of the self-regulatory mechanism of gastric secretion. He considers that the term "peptic ulcer" is an undesirable one because gastric and duodenal ulcers are not derivatives of the same cause and because in their effects upon gastric physiology they are different diseases in spite of the fact that they are both ulcerative processes.

The Clavicular Sign of Late Congenital Syphilis.

S. L. WANG (*The Chinese Medical Journal*, October-December, 1943) states that unilateral enlargement of the sternal end of the clavicle (Higoumenakis's sign) is a stigma of congenital syphilis which occurs even more commonly than interstitial keratitis. It is due to an augmentation of the volume of the bone resulting from syphilitic osteitis.

Treatment of Scarlet Fever.

MAX J. FOX AND NORVAN F. GORDON (*Archives of Internal Medicine*, July, 1944) evaluate three types of therapy for scarlet fever through a review of the literature and an analysis of results in 2,000 cases. Sulphonamide drugs find their chief value in the treatment of certain complications, and are of no value in the management of the toxic phase or type of scarlet fever. The use of commercial antitoxin, prepared with horse serum, combats the toxic phase of the disease, but introduces the danger of foreign protein reactions. Pooled human con-

valerian serum produces rapid clinical response, and offers the best means of therapy in scarlet fever. The notable beneficial effects of its use include the prompt subsidence of fever, alleviation of signs and symptoms, avoidance or improvement of complications, shortened period of hospitalization and the lower mortality rate. Smaller doses of convalescent serum than have been previously used have been found to be effective.

Recovery of a Child from Multiple Rheumatoid Arthritis Complicated by Amyloidosis.

ABRAHAM TRASSOFF, NORMAN SCHNEEBERG AND MAXWELL SCARP (*Archives of Internal Medicine*, July, 1944) report a case of multiple rheumatoid arthritis in a child (Still's disease), complicated by generalized amyloidosis, which ended in recovery. Because of the paucity of records of similar cases, the authors review the related literature. The survey of the literature reveals that the development of amyloidosis in the course of rheumatoid arthritis is unusual and immediately converts an ordinarily benign disease into one with a high mortality. Amyloidosis never follows mild rheumatoid arthritis, but is always preceded by severe or moderately severe arthritis. The retention of intravenously administered Congo red by persons with amyloidosis, first described by Bennhold, is thought to be the most important diagnostic criterion of the disease. The authors' patient with multiple rheumatoid arthritis complicated by amyloidosis was treated with liver extract and recovered of the amyloidosis. In their opinion the evidence presented in their case together with that presented in other reports concerning the therapeutic efficiency of liver extract in amyloidosis, warrants further clinical trial of this treatment.

Vitamins and Hormones in Nutrition.

BENJAMIN F. SIEVE (*The American Journal of Digestive Diseases*, June, 1944) discusses vitamins and hormones in nutrition, and presents evidence of the synergistic action of vitamins and hormones in their relation to nutritional diseases. Endocrine deficiencies, such as are commonly seen at the climacteric period, may interfere with synthesis of vitamins, and on the other hand, as a result of the inability of the organism to absorb sufficient vitamins, secondary hormone dyscrasias may develop. The influence on vitamin absorption of such contributing factors as hormone dyscrasias, infection, gastro-intestinal disease, reduced dietary intake, emotional upset and trauma is discussed. The author states that a careful examination, a complete history, a proper evaluation of apparently insignificant symptoms, with routine laboratory investigation whenever possible, are essential for correct diagnosis. Therapeutic recommendations consist of elimination of all foci of infection and contributing factors, restoration of the endocrine balance by substitution therapy, and the administration of vitamins.

Hyperventilation.

R. F. RUSHMER AND D. D. BARD (*War Medicine*, May, 1944) discuss the hyperventilation syndrome in flying personnel. In civilians this syndrome

occurs most often in emotionally unstable persons, and is associated with apprehension, dizziness, tingling and numbness of extremities and face and impending loss of consciousness. Carpopedal spasm and loss of consciousness may occur; sixteen cases have been reported in this series. Most of the men suffered from chronic air-sickness, and the syndrome alluded to was incidental. The authors state that both spontaneous hyperventilation and air-sickness severe enough to cause elimination from flying are indications of anxiety and apprehension and frequently of long-standing emotional maladjustment.

Albuminuria.

J. H. ABRONHEIM (*War Medicine*, May, 1944) discusses emotional albuminuria. It was noted that after venesection for a Kahn test subjects who fainted were found to have albuminuria, although the urine prior to venesection contained no albumin. One thousand young men between seventeen and twenty-six years of age were examined in this way. Of these men 554 were found to have albumin in the urine before or after the Kahn test was performed; 226 of these had albuminuria before and after the test, and 304 after the test only. One hundred and twenty-seven men fainted; of these 89 had albuminuria after the test and 34 had albuminuria both before and after. The majority of these men were eventually passed because they were found to have no albuminuria in a later urine test. Those rejected for persistent albuminuria amounted to 0.4% of the number examined. Albuminuria has frequently been recorded in young persons, and though many names have been applied to the condition the cause is unknown. Albuminuria in highly strung persons has been mentioned by Diehl and McKinlay, who found albuminuria in 18% of persons with pulse rates of 120 or over, whereas only 0.7% of persons with pulse rates below 60 showed albuminuria. The author records instances in which fear or emotional disturbance was followed by albuminuria. He also mentions that when the subject was given a bright coloured bitter medicine, with the suggestion that it is a potent drug, the albuminuria cleared in 50% of cases investigated.

Mononucleosis.

R. H. MITCHELL AND L. ZETZEL (*War Medicine*, June, 1944) discuss infectious mononucleosis in the army. Twenty-five cases were studied. The ages of the patients varied between nineteen and forty-six years, but twenty-three were between nineteen and thirty. The presenting symptoms were headache, sore throat, malaise, fever, adenopathy, abdominal pain, chest pain and stiff neck in that order of frequency. Fever was noted in fourteen cases, and lasted from one to twenty-eight days. Adenopathy, either cervical or general, was observed in twenty-four cases at some stage. The spleen was enlarged in five cases, and a macular or erythematous rash occurred in a similar number. Weakness and fatigue persisted for more than three weeks in fifteen cases and headache persisted for five months in one case. The diagnosis was made

by finding an increase of lymphocytes of variable size, structure and staining properties. The leucocyte count varied between 6,000 and 30,000 cells per cubic millimetre. The response to the Paul Bunnell heterophile agglutination test was positive within fourteen days in thirteen cases. Contagiousness was low; there was no instance of cross-infection in a ward. Treatment was symptomatic in all but three cases in which sulphathiazole or sulphadiazine was used, in one case with benefit.

Thiouracil in the Treatment of Thyreotoxicosis.

EDWARD ROSE AND JEANNETTE MCCONNELL (*The American Journal of the Medical Sciences*, November, 1944) have treated with thiouracil 37 patients who were suffering from thyreotoxicosis. Thirty patients showed a favourable response, four showed a partial response, and two showed no response to treatment. Three of the patients who showed unsatisfactory response suffered from associated conditions which might have influenced their reactions. In four cases thiouracil was used during preparation for thyroidectomy. One of the four patients died twenty hours after operation, but thiouracil was not regarded as having been a factor in causing the death—autopsy revealed no lesions which could be associated with the use of thiouracil. The control of thyreotoxicosis in a girl thirteen years of age who was suffering from diabetes mellitus was not followed by an increase in her carbohydrate tolerance or by a decrease in her insulin requirement. The histological appearance of the thyroid gland of the patients prepared for thyroidectomy by thiouracil showed the hyperplasia and other changes previously reported by other authors. Eight patients remained in remission for periods varying from three weeks to seven months following the complete withdrawal of thiouracil. On minimal doses of 0.1 to 0.2 gramme daily three patients gave similar responses. Thirteen patients suffered a relapse when the doses were reduced or when the drug was withdrawn; all these patients, however, responded again when administration was resumed. Estimations of the cardiac output of nine patients showed a general tendency towards reduction in output under thiouracil therapy and the reduction was roughly parallel with the decline in basal metabolism. The authors discovered no evidence of refractoriness to thiouracil. Eight patients suffered from unfavourable reactions attributable to the drug. The two most important of these were neutropenia with pharyngitis and fever and these occurred in two cases. Reduction in the size of the thyroid gland occurred in eight cases in which the patients had received prolonged treatment with thiouracil. It was also noted that exophthalmos tended either to remain stationary or to increase slightly. The authors conclude that while much remains to be done before a final decision can be made on the clinical value of thiouracil, the drug may be held to control effectively most of the phenomena of thyreotoxicosis in the large majority of cases. Its use is justified in the prolonged treatment of patients with mild or moderately severe thyreotoxicosis and as a preparation for operation.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on September 21, 1944, at Sydney Hospital, Sydney. The meeting took the form of a series of clinical demonstrations by members of the honorary medical staff of the hospital. Part of this report appeared in the issue of January 6, 1945.

Diabetic Coma.

Dr. W. L. Calov showed a woman, aged thirty-five years, who had attended the diabetic clinic for some months and generally seemed to be well, taking a diet with a caloric value of 2,200 and a small dose of protamine zinc insulin. In February, 1942, rather heavy glycosuria recurred. It was present from time to time thereafter. Early in August, when she had a cold, large quantities of sugar and ketones were noted in the urine. Soluble insulin in three doses a day was ordered. For some reason or other this was altered the following week and protamine zinc insulin was given again. She was admitted to hospital four days later (August 13) with a history of general malaise present for several days and of vomiting of two days' duration. She took her usual dose of insulin in the morning of the day of her admission to hospital; but she vomited her breakfast and she ate very little during the day. She felt ill, she was thirsty and she had been shivering all day. The bowels had not acted for two and a half days.

Examination showed her to be dehydrated, cold and confused. Her pulse rate was 106 per minute and her respirations numbered 36 per minute. Her eyes were sunken and the intraocular tension was low. The breath smelt strongly of acetone. A diagnosis of diabetic pre-coma was made. She was given thirty units of insulin immediately, and the administration of an intravenous infusion of glucose and saline solution was commenced. During the next twelve hours she was very ill; she became comatose, and her life hung in the balance. Large doses of insulin were given, and the infusion of liquids was continued. In about twelve hours she was able to take fluids well by mouth. From that time on her condition improved slowly; but she was very ill for three or four days. In the first 36 hours, 550 units of insulin were given. Ketosis was no longer apparent after about eighteen hours from the time of her admission to hospital. Her temperature was subnormal at the time of her admission; but in the next four days she was febrile. The possibility of an infection was investigated; but none was found.

Dr. Calov said that for the first few days after her recovery from coma she was given a fluid diet rich in carbohydrate and frequent injections of soluble insulin. Later she returned to her normal diet and was given 36 units of globin insulin and ten units of soluble insulin in the morning. She was discharged from hospital on September 1, and she had remained remarkably well since.

Carotinæmia.

Dr. Calov then showed a woman, a diabetic of some years' standing, who had remained well on a diet with a caloric value of 1,300, and twenty units of soluble insulin in the morning and twelve units in the evening. Her skin was deeply stained yellow, especially the palms of the hands.

Diabetic Gangrene.

Dr. Calov's next patient was a man, aged sixty-two years, who had first attended the diabetic clinic on February 11, 1942. He had been a diabetic to his knowledge for some four or five years and had suffered from diabetic gangrene eighteen months previously. He had neglected to take insulin for some months. Dr. Calov said that his diabetes was now under fairly good control. His toes were painful and were affected with the changes commonly seen in cases of advanced vascular degeneration. X-ray examination of the legs revealed calcification of the large arteries.

Dr. Calov also showed a woman, aged sixty-two years, who was a diabetic under satisfactory control. A callosity on the great toe became painful and pus collected beneath it. The callosity was lifted off, a shallow ulcer being left. This was now covered by a black scab. X-ray examination revealed calcification of the arteries of the lower limbs.

Diabetes Complicated by Myxœdema after Thyroidectomy.

Dr. Calov next showed a woman, aged thirty-nine years, who had attended the diabetic clinic first on April 3, 1940.

She had recently been an in-patient, had had treatment for diabetes and had been subjected to thyroidectomy. She felt well. Her weight had increased from six stone five pounds to seven stone twelve pounds in a few weeks after the operation. Some degree of exophthalmos persisted. She continued to increase in weight, and her skin became dry and her voice husky. Her weight increased to nine stone twelve pounds. The basal metabolic rate was estimated at -35%. Treatment with thyroid extract was commenced in November, 1940, and has been continued since. Her diabetic condition had remained under satisfactory control throughout. A mild degree of carotinæmia was apparent.

Gangrene of the Fingers.

The next patient shown by Dr. Calov was a woman, aged seventy-two years, who had suffered from numbness of the tips of the fingers in the cold for a number of years. Recently discoloured areas had appeared on the distal phalanges. The fingers were swollen and cold. Dark ulcerated lesions were present at their tips. She was suffering from hypertensive cardio-vascular disease. Sugar had been noted in the urine from time to time; but the glucose tolerance curve was not that of diabetes, although the blood sugar content was higher at the conclusion of the test than at the commencement.

Achalasia of the Cardia.

Another patient shown by Dr. Calov was a woman, aged fifty-two years, who had been referred to the out-patient department by Dr. R. N. Beazley. She stated that she had been a patient in Sydney Hospital under the care of Sir Herbert Maitland thirty years earlier, suffering from difficulty in swallowing. She had had difficulty in swallowing ever since. She took about half her meal and felt that it did not go into the stomach; she felt it lying on her chest. She then took several gulps of water and felt the food go on. She was then able to take the rest of her meal, and then had to take further gulps of water. Sometimes the food would not pass on into the stomach, and then she had to make herself vomit. During this period of twenty years she had led a strenuous life and had borne and reared a family.

Dr. Calov said that the patient was in remarkably good general condition considering her history, and she was cheerful. Some dullness to percussion might be noted to the right of the spine. Fluoroscopic examination revealed great widening of the mediastinal shadow. When she swallowed a cupful of barium meal, the shadow of the barium was seen to occupy a saucer-like area about four inches across in the lower part of the thorax. When she took a few gulps of water the barium was seen to move on, at first in a slight trickle and then rapidly into the stomach. It was proposed to admit the patient to hospital and employ treatment by Hurst's method with a weighted bougie.

Carbuncle.

Dr. Calov then showed a woman, aged fifty-three years, who had been admitted to hospital suffering from a huge carbuncle of the back of the neck. She was found to be a diabetic with a high glucose tolerance curve. She was given soluble insulin three times a day. The septic process at the back of her neck spread, and extensive sloughing of skin and deep fascia occurred. Shortly an extensive area of cellulitis appeared at the vertex. Wide incision was employed. In the course of a few weeks the sloughs separated, and an ulcerated area measuring about three and a half inches by three inches was apparent at the back of the neck. A few Reverdin's grafts were applied. Healing occurred with a good deal of cicatricial contraction. Dr. Calov said that the patient was generally well. As she had lost one eye in her youth, and as the vision of the other eye was largely obscured as the result of corneal opacity, she had some difficulty with her insulin. He remarked that the case was a striking example of the almost miraculous effects of insulin; in pre-insulin days the patient would not have lived for more than a week or a fortnight.

Carcinoma of the Lung.

Dr. Calov finally showed a man, aged sixty-four years, who had been admitted to another hospital on May 4, 1944, complaining of cough, blood-stained sputum, breathlessness and pain across the shoulders. His symptoms appeared in January, 1944. Examination revealed congestion of the neck, dilated veins of the upper limbs and thorax, impairment of the percussion note and bronchial breathing in the upper part of the right hemithorax. X-ray examination revealed a dense opacity in the right upper zone. A diagnosis of

neoplasm was made. He was transferred to Sydney Hospital on July 15. Dr. M. P. Susman performed bronchoscopy and removed a piece of material for histological examination on August 11. Microscopic examination showed the growth to be an "undifferentiated carcinoma actively infiltrating the subepithelial connective tissue". In the meantime the Casoni test and the Wassermann test had been performed without reaction, and repeated examination of the sputum was made without the discovery of tubercle bacilli.

Dr. Calov said that the patient was to be readmitted to hospital. Dr. Susman proposed to repeat the bronchoscopic examination and to implant radon seeds in the neoplasm.

Post-Operative Myxœdema with Myasthenia Gravis.

Dr. H. L. SPEARMAN showed a female patient, aged forty years, who had complained of "pins and needles" in her hands for over seven years, followed six months later by pains all through her body like electric shocks. Lately she had noticed swelling at the sides of the neck and face, and had complained of shortness of breath on slight exertion, of dry skin and of difficulty in walking because the legs "went out". Her head tended to fall forwards. Increased appetite and thirst were present. Her mother had died of *diabetes mellitus*. In 1937 thyroidectomy had been performed for thyrotoxicosis.

On examination, the patient was found to have a myxœdematous appearance with supraclavicular pads of fat, and a shuffling gait, dragging the left leg. The skin was dry and there was a fine tremor of the outstretched hands; the left arm sagged rapidly. Von Graefe's sign was present. In the left leg the tendon reflexes were brisker than in the right, and there was loss of power without wasting. The loss of power increased rapidly with exercise. Rombergism was present and the finger-nose tests revealed incoordination. The systolic blood pressure was 140 millimetres of mercury and the diastolic pressure 95. An injection of "Prostigmin" was given, with relief of symptoms, and the patient walked well. Later she stated that the relief had lasted for several hours. An X-ray film revealed no shadow in the area of the thymus gland. Dr. Spearman said that she was now under treatment with thyroid gland and "Prostigmin" tablets.

Disseminated Sclerosis.

Dr. Spearman then showed a female patient, aged forty-three years, who had complained of pains in the legs of eight years' duration, with difficulty in walking, causing the toe of her right shoe to wear out quickly. She had attacks of giddiness and tended to fall. There were attacks of numbness in the legs and "pins and needles" and itching above the knees, and precipitancy of micturition. Dr. Spearman said that the progress of the disorder had been interrupted by numerous remissions.

On examination, the patient walked with a spastic gait and found it difficult to maintain her balance. She exhibited a spastic paraplegia with brisk tendon reflexes in arms and legs, Babinski's plantar response on the right side with absence of vibration sense at the right ankle, and defective joint sense in the right hallux. The abdominal reflexes were absent. Slight intention tremor, adiadochokinesis, and nystagmus on looking to the right were present. There was hesitancy in articulation. Examination of the optic disks revealed bilateral pallor. The Wassermann test failed to produce a reaction.

A Candidate for Disseminated Sclerosis.

Dr. Spearman next showed a female patient, aged fifteen years, who complained that one year earlier she had had persistent right facial neuralgia which lasted for six or seven months and for which no cause could be found. The pain ceased, and one month later diplopia occurred, in which "people seemed to have an extra pair of eyes in their foreheads". This lasted for about six hours, and was followed immediately by mistiness of vision in the left eye. Examination of the left *fundus oculi* revealed a large patch of exudate in the macular region extending to the edge of the optic disk. Within three weeks this had been absorbed, a normal appearance being left. No scotoma for colour was found. The central nervous system was normal. One month later the right upper and lower abdominal reflexes were absent, whilst those on the left were brisk. Two months later (September 8, 1944) there was no evidence of any departure from normal in the nervous system. Dr. Spearman said that the patient was considered to be a candidate for disseminated sclerosis, as all her symptoms were prodromata of that condition.

Chronic Cerebral Softening.

Another patient shown by Dr. Spearman was a female, aged sixty years, who complained of loss of use of the right leg of fifteen years' duration, with weakness of the left hand. The weakness in the right leg developed during one day, that in the left hand followed a few weeks later, and the left eyelid had drooped for years. Occasional precipitancy of micturition was present.

On examination, the patient was seen to walk with a spastic hemiplegic gait. There was a fine tremor of head, lips and tongue. Examination of the right leg revealed spastic paresis with increased tendon reflexes and ankle clonus. The plantar reflexes were both extensor in type, and the vibration sense, muscle and joint sense and two-point discrimination were impaired in both legs. In the arms there was slight left-handed motor apraxia with intention tremor and a rhythmic rolling tremor of both hands. Narrowing of the left palpebral fissure was present, the pupils reacted to light and accommodation and the eye movements were normal. Examination of the retina revealed hypertensive changes. The blink and whistle-smile reflexes were absent. The systolic blood pressure was 240 millimetres of mercury and the diastolic pressure 170.

Dr. Spearman said that stramonium appeared to give this patient the greatest relief. She was shown by courtesy of Dr. Evan Jones, Medical Superintendent of Broughton Hall Psychiatric Clinic.

Facial Hemiatrophy: Parry-Romberg Syndrome.

Dr. Spearman then showed a female patient, aged thirty-three years, who complained that one year earlier she had noticed that her face was changing. She had suffered from poor appetite, sleeplessness and headache for several years.

On examination, facial asymmetry due to wasting on the right cheek was found, with a hollow below the malar bone and loss of submalar fat. The right temporal muscle was weak, but the masseter appeared normal. Skin sensation was normal. The tongue had a tendency to deviate to the right and the uvula was pulled to the right on phonation. There were no eye signs. In the lower limbs the plantar responses were absent and the joint sense in the toes was slightly impaired. X-ray examination revealed mucosal thickening of the maxillary sinuses and slight haziness of the frontal sinuses. Dr. Spearman said that the patient was being observed for the possible development of motor neurone disease, and was shown by courtesy of Dr. Evan Jones, Medical Superintendent of Broughton Hall Psychiatric Clinic.

Bilateral Cervical Rib Pressure.

The next patient shown by Dr. Spearman was a female, aged thirty-seven years, who complained that for six months she had been troubled with severe pain in the left elbow, steadily growing worse. It was worst when she was carrying parcels and in bed at night, when she found that putting her hand up behind her head relieved it. Lately the hand and forearm seemed to swell slightly and change colour. Two years earlier she had had a rudimentary cervical rib removed from the right side by Dr. C. E. Winston, with complete relief. Since then she had favoured the right arm and made her left arm do the work.

On examination, the left forearm and hand were seen to be slightly swollen and cyanosed. No sensory changes were found. The right forearm and hand were smaller than the left, possibly owing to disuse. The abductor and *opponens pollicis* muscles were wasted, and patchy anaesthesia to pain was present. An old X-ray film taken before the operation showed rudimentary ribs on both sides.

Dr. Spearman said that though bilateral rudimentary ribs were common, it was not usual to see pressure symptoms on both sides. Three forms of accessory cervical rib were recognized: (i) an enlarged seventh cervical transverse process; (ii) a short articulated rib with fibrous prolongation; (iii) a long, articulated, bony rib. The first two usually caused pressure symptoms. The enlarged process was commonest, and when it was associated with plexus pressure, it had a characteristic radiographic appearance sloping down and out and tending to taper, the tip being the most sloping part. In the case under discussion the tapering sloping tip on the right side and the fibrous prolongation on the left side were present. Dr. Spearman said that if the patient had used her right arm more after the operation, the left-sided pressure symptoms might not have been precipitated. The patient was shown by courtesy of Dr. C. E. Winston.

Subacute Combined Degeneration of the Spinal Cord.

Another patient shown by Dr. Spearman was a female, aged fifty-seven years, who had been first examined in May,

1944, complaining of weakness for six weeks and of inability to walk straight for three weeks. Numbness had been present in her fingers for ten years. In 1936 she had been treated for secondary anaemia, but had had no treatment since.

On examination, she was ataxic and had to hold on to the furniture as she endeavoured to walk. Otherwise she appeared well nourished and had a good colour. The heart, lungs and abdomen were normal. The systolic blood pressure was 140 millimetres of mercury and the diastolic pressure 100. She was incoördinate, and Rombergism was obvious. The knee jerks were exaggerated and the ankle jerks were absent. The plantar response was extensor in type. No wasting was observed, but the calves and soles were tender to light pressure. Patchy analgesia was present on both legs, and vibration sense was absent at the right ankle. In the hands astereognosis and appreciation of weight were defective; a florin was thought to be a padlock. Examination of the blood gave the following information: the red cells numbered 3,840,000 and the white cells 8,800 per cubic millimetre; the haemoglobin value was 84% and the colour index was 1.14; considerable macrocytosis was present, and no megalocytes were seen. The Wassermann test failed to produce a reaction. Dr. Spearman said that the patient had been admitted to hospital under the care of Dr. H. Ritchie, and had there remained since. She had had intensive liver therapy, the ataxia and astereognosis had been greatly relieved, and her general condition was much improved.

Motor Neurone Disease (Progressive Muscular Atrophy).

Dr. Spearman finally showed a female patient, aged thirty-three years, who had complained of difficulty in using her left hand for about twelve months, and of slight weakness in the right hand commencing four months later. Four years earlier she had had a similar attack, with "pins and needles" in the left hand and a tendency to drop things.

On examination, she was seen to walk with a normal gait; wasting of the muscles of the left forearm and hand was present, most severe in the dorsal interossei muscles. She was unable to adduct her little finger. Fibrillation was observed in the left biceps. In the right hand fibrillation was present in the first interosseous space. There was winging of the scapulae, most pronounced on the left side. The tendon reflexes were brisk in all limbs; plantar stimulation produced no response. There were no eye signs and the ocular fundi were normal. The Wassermann test failed to produce a reaction.

Chronic Glomerular Nephritis.

Dr. H. G. MITCHELL showed a female patient, aged twenty-six years, who had been examined in February, 1944, suffering from chronic glomerular nephritis. The urine contained thick albumin. The systolic blood pressure was 220 millimetres of mercury and the diastolic pressure 140. Retinobulboiditis was present, and vision was practically absent. At the time of the meeting her blood pressure and urinary condition remained about the same; but her eye condition was clearing up; she was now able to get about by herself and to read large print, and she felt remarkably well.

Pathological Fracture of the Humerus.

Dr. Mitchell then showed a female patient, aged sixty-seven years. The patient travelled in a tram, and on pushing herself up from the seat felt a severe and sudden pain in the left arm. When she was seen about two hours later the arm was too painful to be examined, but next day unnatural mobility was elicited. X-ray examination revealed a pathological fracture of the left humerus in the upper part of the shaft, in good position. It was revealed that eight weeks previously she had had her thyroid gland removed; the gland proved on examination to be carcinomatous. The patient herself was well nourished and felt well. Dr. Mitchell said that as she was returning to the country, he had no opportunity of getting X-ray films of the other parts of the skeleton.

Leucæmia.

Dr. T. E. H. SPARK first showed a female patient, aged forty-nine years, who gave a history of progressive weakness and breathlessness on exertion for the past four years. She also stated that she had been aware of a mass in the abdomen for some years prior to the appearance of symptoms.

On examination, the patient presented a conspicuously plethoric appearance, with dilated veins and areas of cyanosis about the face. The retinal veins were much dilated, and

hemorrhagic phenomena were present on both forearms and lower limbs. The most conspicuous sign, however, was an enormously enlarged spleen, which extended down to the pelvis and almost completely filled the abdominal cavity. It was not at all tender, but hard on palpation. The liver was just palpable below the right costal margin, but no enlarged glands were discovered. Physical examination of other systems gave negative results, excepting for the blood pressure, which was 190 millimetres of mercury (systolic) and 130 millimetres of mercury (diastolic). Hematological investigation revealed the following facts. The red blood corpuscles numbered 7,120,000 per cubic millimetre, and the haemoglobin value was 19 grammes *per centum*. The cell content of haemoglobin was full; moderate anisocytosis, slight macrocytosis, moderate poikilocytosis and very slight polychromasia were present. Platelets were scanty. The leucocytes numbered 20,000 per cubic millimetre; 70% were neutrophil cells, 3.5% were basophil cells, 4.5% were monocytes, 7.5% were lymphocytes, 1% were band forms, 5% were metamyelocytes, 6% were myelocytes and 2% were myeloblasts.

Dr. Spark pointed out that such a gross degree of splenomegaly was most often associated with chronic myeloid leucæmia, but that in such cases one expected to find a well-developed anaemia. The patient's appearance, however, suggested polycythæmia rather than anaemia. Certain cases of chronic leucæmia presented a polycythæmic phase in the early stages, but this could not be regarded as an early case, and such a blood count was therefore the more puzzling. Dr. Marjorie Little was of the opinion that, though the blood picture was most unusual, the case would probably declare itself at a later date as one of more typical leucæmia. She suggested that the examination of sternal marrow might be helpful.

Nephrosclerosis.

Dr. Spark's second patient was a male, aged thirty-three years, who gave a history of headaches and progressive loss of vision for the past twelve months. The headaches were becoming more frequent and more severe, so that at the time of the meeting he was seldom free from pain. During the past twelve months he had also become short of breath, and nocturnal frequency of micturition had developed.

On examination, the blood pressure was found to be just below 300 millimetres of mercury (systolic) and 210 millimetres of mercury (diastolic). Examination of the *fundi oculorum* revealed bilateral papilloedema, together with multiple exudates and hemorrhages. The heart was grossly enlarged, but there were no signs of congestive heart failure. The urine contained a faint cloud of albumin, and there were 200 red cells per high-power field. Dr. Spark pointed out that the unusually high diastolic pressure, the age of the patient, and the short history, strongly suggested a diagnosis of malignant hypertension or nephrosclerosis. Other diagnostic criteria were present in the typical eye changes and the presence of red cells in the urine. All these manifestations combined to produce a clinical picture which was unmistakable, and the outcome of which was invariable.

Radiological Exhibit.

Dr. D. G. MAITLAND showed a series of X-ray films illustrating various conditions. Amongst the films were several showing malignant changes which had occurred after an interval of two months, adjacent to a gastric ulcer. Other films illustrated the various types of gall-stones as demonstrated by Graham's test, and a further series showed single and multiple hydatid cysts of the lungs.

Correspondence.

"THE PHARMACEUTICAL BENEFITS ACT, 1944."

SIR: The circular newsletter from the New South Wales Branch of the British Medical Association on the subject of the *Pharmaceutical Benefits Act, 1944*, is a valuable summary—particularly to those who have not had an opportunity of attending meetings where discussions on this matter have taken place.

Certain points, however, are not clear, and it would be a great help in understanding the problem if Dr. Hunter would supply further information in reply to the following questions:

1. Sir Henry Newland stated: "... welfare of the public is jeopardized by a scheme which would limit the freedom

of the doctor in prescribing for each of his patients exactly what medicine he regards as most suitable to restore him to health." How does the act limit the freedom of prescribing, and is it inferred that greater restriction is put on prescribing when only a small proportion of prescriptions have to be paid for than when all have to be paid for?

2. (a) Is there any difference in principle involved in using a State formulary as distinct from a hospital formulary or the Australian Pharmaceutical Formulary, both of which are widely used at present?

(b) How does the new act differ in principle from "lodge" prescribing under which system patients have to pay for some preparations?

(c) How will the new act affect prescribing for lodge patients?

3. Non-cooperation by the profession prevents division of patients into two classes, that is, those who are entitled to benefits (great majority) and those who are not, and preserves one class, that is, those who are not so entitled. How does this help the community?

4. (a) Apart from the inconvenience, are there any objections to a patient's being examined every time a prescription is repeated? If so, what are they?

(b) Were the implications of this clause—particularly the difficulties in the country—stressed in the conferences with the Government, or did discussions break down on the subject of the formulary and go no further?

5. Is system of control acceptable to the Pharmaceutical Society and are pharmacists negotiating for control by a corporate body?

6. Is there any objection to principle of free medicines?

7. (a) Does council know just how comprehensive the formulary is?

(b) If not, how is the profession to estimate the value of a service it is asked to oppose?

8. How is non-cooperation to be carried out in the case of such well-known and commonly used preparations as *Lotio Calaminæ Cremor Zinci*, "A.P.C.", "Sulpha" drugs *et cetera*, which are bound to be included in any formulary?

9. Have full details of the discussions at conferences with the Government been published? If so, when were they published?

10. What "objectionable features" were mentioned at the conference of June 29-30, 1944?

11. Does council consider that the act will confer no benefits on the public and will actually cause harm? Or does it consider that the act merely does not go far enough?

12. Has the Federal Council discussed with the Government, and rejected, a salaried medical service? If so, when did such discussions take place, and what were the conditions of the service that was rejected?

Yours, etc.,

C. H. W. LAWES.

Australian Army Medical Corps,
Australian Imperial Force,
December 1, 1944.

SIR: The answers to Major C. H. W. Lawes's questions are:

1. The *Pharmaceutical Benefits Act* does not directly limit freedom of prescribing, but indirectly will do so by reason of the fact that some patients will complain if prescriptions ordered for them do not come within the formulary, that is, are not free. In other words, medical practitioners will be placed in the unfair position of being influenced by monetary (patients' finances) rather than therapeutic considerations.

No; the inference is that greater restriction is put on prescribing when a larger proportion of prescriptions has to be paid for.

2. (a) As explained above, the use of a set formulary will indirectly limit freedom of prescribing. With hospital formularies, however, there is no limitation whatever, direct or indirect, and the hospital medical officer is free to order without the formulary and indeed very often does so.

Similarly with the Australian Pharmaceutical Formulary, no practitioner is bound to order within the formulary and he is quite entitled to vary the quantity of any of the ingredients in the prescriptions contained in the formulary.

There would be no objection whatever to using a State formulary provided that its use was optional.

(b) In that both provide certain limits of prescribing there is some similarity of principle in the government and lodge pharmaceutical services.

But there is this very important difference, namely, that whereas with the lodge services the practitioner is not bound

to the formulary and may order, without cost to the patient, any preparation contained in the British Pharmacopœia and any combination of these preparations, with the services provided under the *Pharmaceutical Benefits Act* the practitioner is only able to order, without cost to the patient, such preparations as are contained within the formulary and no others, even though they may be in the British Pharmacopœia. With a few exceptions he will not be able to increase, as he can with the lodge formulary, the quantity of any ingredient in or add another ingredient to a prescription in the formulary.

There is also another important difference, namely, that, whereas the lodge member pays, and knows he is paying, a limited amount for a limited service, the taxpayer is paying an unknown amount for what he is given to understand is a complete pharmaceutical service—to quote the Minister for Health: "The Department of Health will issue a national formulary of prescriptions covering the whole range of scientific medical treatment recognized by the medical profession."

(c) The lodge patient will be on the same footing as any other member of the community in that he will be able to obtain free such pharmaceutical benefits as are provided under the act. It is unlikely that the lodge member will continue to pay for pharmaceutical benefits provided by a friendly society.

3. In one of its objections to the *Pharmaceutical Benefits Act* the Federal Council states "that the measure purports to provide a benefit to every member of the community, but in point of fact does not do so. Under the provisions of the act the community will be divided into two sections, (a) the individuals whose pharmaceutical requirements come within the limits of the official formulary and who will be entitled to the benefits of the act, and (b) the individuals whose pharmaceutical requirements do not come within the limits of the formulary and who will not be entitled to the benefits of the act. The Federal Council considers that this discrimination between individuals through circumstances over which they have no control is unfair to the public and entirely unjustifiable. . . . The council, therefore, believes that it is acting in the best interests of the community in refusing cooperation."

4. (a) Generally no, but circumstances, for example, emergencies, country practice, may render examination impossible.

(b) Yes. The implications of all clauses of the act affecting the profession were very forcibly pointed out to the Government representatives at the conference at Canberra.

5. Have no knowledge, and in any case this is a matter entirely for pharmacists themselves.

6. Yes. A recent examination of the social services in New Zealand revealed that since the introduction of free pharmaceutical benefits the consumption of drugs has increased over 300% and is still increasing, and the cost of providing these benefits is giving the authorities much concern. For every seven shillings and sixpence paid out for medical benefits six shillings is being paid out for pharmaceutical benefits. While the profession is not entirely blameless, there is no doubt that the increased consumption is due to the fact that the benefits are free and that the public do demand them. There is not the slightest doubt that much of the medicine supplied goes down the sink or into the refuse bin.

The increasing yearly consumption of drugs in Great Britain has always been a concern to the authorities. The only answer to the problem is to require the patient to pay a proportion of the cost.

The Federal Council's objection to the *Pharmaceutical Benefits Act* is based mainly on the ground that the money to be expended in providing the benefits, said to be £2,500,000, could be much better spent in other directions, for example, improvement in the care and treatment of the tuberculous.

7. (a) No, but in the first conferences with the Government representatives the Federal Council was informed that despite the council's representations it would not be possible (i) to increase the dose of any one of the ingredients in a prescription; (ii) to add any other ingredient to a prescription. At the June conference, however, the Government representatives advised that it would be possible to allow of a few drugs being added to mixtures.

(b) The limitations of the formulary have been indicated above.

8. That will depend on the attitude of the individual practitioner. There is no legal obligation on the practitioner either to prescribe within the formulary or on the prescribed form.

9. No—by Government request.

10. (a) Departmental control.
- (b) Restricted formulary.
- (c) Penalty fifty pounds or imprisonment for three months for prescribing without examination.
- (d) Inclusion in a pharmaceutical benefits act of a provision giving the Minister power to enter into an agreement (on such terms as to remuneration, allowance and otherwise as he thinks fit) with any medical practitioner for the supply of medical services.
- (e) Composition of the formulary committee (under the act this consists of six persons appointed by the Minister, two of whom shall be practising medical practitioners, two practising pharmacists, and if available a pharmacologist). Actually the committee as constituted has on it three pharmacists and three medical practitioners, only one of whom has had any extensive clinical experience, and the chairman a Government representative, who is also a pharmacist.
- (f) The provision that an offence shall not be prosecuted without the written consent of the Minister. There is no provision in the act, such as is in the *National Insurance Act of Great Britain*, for investigation of a charge against a practitioner by his professional colleagues.

11. The Federal Council believes that the act will not materially improve the health of the community, and that, as previously stated, the money required for the furnishing of the benefits could be much better spent in other directions.

12. At the June conference the general principle of how medical practitioners might be paid, for example, by salary, by fee for service, or by capitation payment, was considered, but no concrete scheme for a salaried service was discussed. The council, however, did indicate at this conference and at the conference in September that a salaried medical service was unacceptable to the profession as not being in the public interest.

Yours, etc.,

J. G. HUNTER,

Medical Secretary, New South
Wales Branch, British Medical
Association.

British Medical Association House,
135, Macquarie Street,
Sydney.

January 9, 1945.

RELEASE OF DOCTORS, NURSES AND SOCIAL WORKERS FOR "UNRRA".

SIR: The Commonwealth Government has recently approved of a scheme to bring 17,000 children to Australia each year as migrants from Britain and Europe. The Commonwealth proposes to set up machinery to arrange with international bodies, such as the "United Nations Relief and Rehabilitation Administration" (UNRRA) and the British and European Governments, to seek out, select and bring to Australia suitable war orphans and other children. It is the attitude of the Federal authorities to the medical staffing of what might be called Australia's share in "UNRRA's" work, to which I draw attention.

The selection of such large numbers of children from centres of devastation and family turmoil, as seen in Britain and in Europe, will demand the most carefully directed and skilled medical administration. Since Australia is to be the future homeland of these children, and Australians are to help them grow into adulthood with a reasonable, normal outlook, the problem of their selection, handling and final transport to Australia is surely the best done by our own doctors, nurses and social workers; for none understand better than they the conditions under which the future lives of these children will be moulded. Australia must not and certainly has no need to trust this task to the medical personnel of other countries, already absorbed in their own relief and rehabilitation, and who cannot possibly know Australian living conditions and the Australian way of life.

If we accept these children, we must know that they come to us free from tuberculosis and other communicable diseases (now widespread in Europe), free from acute malnutrition such as rickets and from severe dental caries. They must be free from mental disease, acquired or hereditary, and they must have a reasonable intelligence quotient; and something at least must be known of their home background and the war history which made them orphans or qualified them as migrants to Australia.

This tremendous and humane undertaking will need a team of keen and able doctors, including psychiatrists and

specialists in diseases of children, nurses and social workers specially trained in handling children, all chosen for their imagination, enterprise and compassion. No such migration scheme can have the measure of success which is planned and expected of it unless a team of Australian men and women are sent abroad to implement its principles.

The activities of "UNRRA" in this connexion serve a twofold purpose; relief and rehabilitation is applied among the children of European countries liberated from the enemy, and at the same time Australia receives a proportion of the estimated number of child migrants.

However, it appears that doctors and nurses will not be released from the forces for overseas duty with "UNRRA". The "UNRRA" bill has passed the Senate in all stages, and the release of certain categories of Australian Military Forces personnel for service with "UNRRA" has been approved by the Government and notified in army general routine orders. On November 28 the Acting Minister for the Army (Senator Fraser) stated that "in view of the general shortage of doctors and nurses, approval for releases of personnel in these categories will not be granted". It is the wisdom of this policy which I question.

The Australian Government has agreed to play its part in assisting "UNRRA" in the humane work of relief and rehabilitation in Europe, and at the same time it has agreed to a plan to accept 17,000 children as migrants to Australia each year, using, in all probability, the administrative and technical machinery of "UNRRA" for the purpose. These two commitments are closely bound together and cannot be separated; and in order to meet them Australia must release at least a small number of doctors, nurses and social workers from the armed forces for overseas duty with "UNRRA".

Australia and Australians have suffered, nationally and individually, almost not at all during the five years of this war. We have our own future to plan and build for, and our own post-war reconstruction schemes which are fraught with difficulties; but we have no need for relief from want and misery; a direct contrast to conditions found in parts of liberated Europe. It is for this reason that I believe Australia can and should spare some doctors, nurses and social workers who are those most urgently needed by "UNRRA". That defence commitments, including medical personnel, must be met needs no emphasis; but the future national welfare of this and other countries, which we are now entitled to anticipate more hopefully, must receive more attention.

Not a great number of medical personnel are required; but if Australia is to play her part, some doctors, nurses and social workers must be released. The work of "UNRRA" in all its manifestations is humane and urgent, and its fundamental policy, "From each according to capacity; to each according to need", is worthy of our finest endeavour.

Yours, etc.,

GRAHAM ANDREW, M.B., B.S.

Royal Australian Air Force,
December 12, 1944.

IMMUNIZATION AGAINST DIPHTHERIA AND PERTUSSIS.

SIR: In his Sir Richard Stawell oration, Dr. S. A. Smith said that education on diphtheria immunization has had better effects in Canada than in Australia. He concludes that "the fault lies mainly with the people". I cannot agree with this conclusion.

I have seen no detailed accounts of the education work of the Canadian health authorities, but it is reasonable to conclude that it is in keeping with the vigorous, sustained, well-planned campaigns which have resulted in the practical elimination of diphtheria in parts of Canada.

In Australia generally, in South Australia in particular, the argument is heard, "the people won't respond". My experience has been that facilities for diphtheria immunization lag behind the demand, and that immunization propaganda is, despite recent improvements, meagre, monotonous, dull and unsustained. Health authorities should realize that they are competing with the publicity experts of Hollywood and elsewhere. More modern propaganda methods, including radio and screen, together with lectures to parents' organizations, are needed.

Again, here, there is all too little sustained campaigning, too little central directing and driving organization. In general most local authorities provide only one annual public opportunity for immunization. In this regard the Unley City Council's decision to conduct a monthly immunization clinic is a big step forward.

As to whooping cough immunization, although now a well established practice, few local or central health authorities, except in New South Wales, have shown any interest. I venture to suggest that many do not even know of its possibilities. I have heard of very few suggestions from doctors about the need for public facilities for pertussis immunization.

How easy it is to blame the people for backwardness in health matters; I suggest that if those who have the knowledge make sure that it gets to the people, they will respond in no uncertain way to have it put into effect. To get the knowledge to the people at least as much imagination, money and energy must be put out as is expended by, say, the patent medicine concerns. To apply this knowledge doctors especially should play a much more active part in organizing public health facilities.

Yours, etc.,

ALAN FINGER,

Medical Superintendent.

Infectious Diseases Hospital,
Northfield,
South Australia.
January 7, 1945.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 2, of January 4, 1945.

PERMANENT NAVAL FORCES OF THE COMMONWEALTH (SEA-GOING FORCES).

Promotion.—The following promotion is made: *To be Acting Surgeon Lieutenant-Commander*: Surgeon Lieutenant Trevor Alexander McLean, dated 1st November, 1944.

Emergency List.

Promotion.—Surgeon Lieutenant Kenneth Charles Armstrong is promoted to the rank of Surgeon Lieutenant-Commander, dated 2nd December, 1944.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force: Medical Branch.

The grant of the acting rank of Group Captain to Temporary Wing Commander H. J. Melville (1171) is terminated upon his ceasing to occupy a Group Captain post, with effect from 5th July, 1944.

Citizen Air Force: Medical Branch.

Temporary Flight Lieutenant T. E. H. Spark (267437) is granted the acting rank of Squadron Leader whilst occupying a Squadron Leader post with effect from 1st October, 1944.

The grant of the acting rank of Wing Commander to Temporary Squadron Leader H. S. Kirkland (1181) is terminated upon his ceasing to occupy a Wing Commander post with effect from 16th October, 1944.

The grant of the acting rank of Squadron Leader to Temporary Flight Lieutenant E. A. Eddy (255903) is terminated upon his ceasing to occupy a Squadron Leader post with effect from 12th October, 1944.

The grant of the acting rank of Group Captain to Temporary Wing Commander M. L. Creightmore (291210) is terminated upon his ceasing to occupy a Group Captain post with effect from 27th September, 1944.—(Ex. Min. No. 8—Approved 4th January, 1945.)

The probationary appointments of the following Temporary Flight Lieutenants are confirmed with effect from the dates indicated: C. Rowe (267155), R. T. Davies (257502), C. R. Ratcliff (267517), R. J. Rutherford (267533), R. G. Skinner (267526), I. H. F. Swain (267551), N. M. Kater (267549), B. T. Dowd (267562), B. V. Mutton (267570), K. H. Sisson (257576), F. J. D. Giblin (267571), C. R. Wherrett (267599), 14th November, 1944. J. B. Craig (297223), 23rd November, 1944.

Reserve: Medical Branch.

Wing Commander F. G. Steele (261601) is transferred from the Active List with effect from 7th November, 1944.—(Ex. Min. No. 3—Approved 4th January, 1945.)

DECORATIONS.

IN an order issued on December 29, 1944, Squadron Leader W. B. Marsh, R.A.A.F., was mentioned in dispatches.

Air Vice-Marshal Thomas Ernest Victor Hurley, C.M.G., has been appointed to be a Companion of the Most Honourable Order of the Bath.

Captain (Temporary Major) Percival Landon Bazeley has been appointed an officer of the Military Division of the Most Excellent Order of the British Empire.

The Royal Australasian College of Surgeons.

MEETING OF BOARD OF CENSORS.

THE next meeting of the Australian Board of Censors of the Royal Australasian College of Surgeons will be held at the College, Spring Street, Melbourne, probably early in May, 1945.

Candidates who desire to present themselves at this meeting should apply to the Censor-in-Chief for permission to do so on or before March 15, 1945.

The appropriate forms are available at the College, Spring Street, Melbourne, and at the offices of the various State secretaries.

Obituary.

JAMES MURRAY WHITEHEAD COOK.

DR. JAMES MURRAY WHITEHEAD COOK, whose death in the latter half of 1944 was announced in this journal, was born in 1861 at Catrine in Ayrshire, Scotland. He studied medicine at Glasgow and Edinburgh and graduated Bachelor of Medicine and Master of Surgery of the latter university in 1888. After some experience in London in the years 1890 to 1893, he returned to Scotland, where he remained until 1897. He then came to Australia and became assistant to the late Dr. Ure at Brisbane. Here he had the misfortune to meet with an accident, being thrown from a sulky in Queen Street. He received a severe injury to his skull which was thought to be fractured. Recovery from this injury was a slow process, but he was eventually able to resume work and chose Barcaldine as his future home. Here he remained as the physician and friend of the people in this important district until 1934, when he retired from active work and went to live at Rockhampton. He lived here till his death. Two sons are members of the medical profession.

DAVID PETER GREENHAM.

WE regret to announce the death of Dr. David Peter Greenham, which occurred on January 4, 1945, at Corryong, Victoria.

LIONEL WILFRED BOND.

WE regret to announce the death of Dr. Lionel Wilfred Bond, which occurred on January 9, 1945, at Sydney.

CLIVE LANSDELL PAINE.

WE regret to announce the death of Dr. Clive Lansdell Paine, which occurred on January 12, 1945, at Atherton, Queensland.

Australian Medical Board Proceedings.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Practitioners Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Fay, Franklin Robert, M.B., B.S., 1943 (Univ. Melbourne), Sayer-crescent, Hobart.
 Ramsay, Hugh Thomson, M.B., B.S., 1944 (Univ. Melbourne), Launceston, Tasmania.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of *The Medical Acts, 1939 to 1940*, of Queensland, as duly qualified practitioners:

Vattuone, Angelo Bartolo, M.B., 1928 (Univ. Genoa), Rosebery, Tasmania.
 Whitby, William Thomas, M.B., B.S., 1941 (Univ. Sydney), Finley, New South Wales.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Arnot, Eleanor Hattie, M.B., B.S., 1942 (Univ. Sydney), Royal Alexandra Hospital for Children, Camperdown.
 Kennedy, Marcus Matthew, M.B., B.S., 1933 (Univ. Sydney), 114, Ramsay Road, Haberfield.
 Cranswick, George Noel Harvard, M.B., B.S., 1942 (Univ. Sydney), F/Lt. G. N. H. Cranswick, Group 858, R.A.A.F., Pacific.

THE undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

Armati, Leo Vivian, M.B., B.S., 1939 (Univ. Sydney), NX83, Major L. V. Armati, 113 A.G.H., Australia.
 Carman, James Herbert, M.B., B.S., 1939 (Univ. Sydney), NX123989, Captain J. H. Carman, ANGAU, Port Moresby.
 Christie, Amiel Colin, M.B., B.S., 1942 (Univ. Sydney), NX263549, Captain A. C. Christie, 3, Mirradong Flats, Kirribilli Avenue, Kirribilli.
 Clipsham, Sidney Brookes, M.B., 1938 (Univ. Sydney), NX137564, Major S. B. Clipsham, 7 Australian Field Ambulance, Australia.
 Hume, Kevin Francis Hamilton, M.B., B.S., 1942 (Univ. Sydney), NX200495, Captain K. F. H. Hume, 155, Oberon Street, Coogee.
 Mutton, Geoffrey Vernon, M.B., 1938 (Univ. Sydney), NX34710, Major G. V. Mutton, 20, Reddall Street, Manly.
 Quirk, Donald Francis, M.B., B.S., 1943 (Univ. Sydney), 337, Victoria Street, Chatswood.
 Rowe, Charles, M.B., 1942 (Univ. Sydney), 78, Murdoch Street, Cremorne.
 Walsh, John Owen, M.B., B.S., 1934 (Univ. Sydney), 9, Kurrajong Avenue, Leeton.

Medical Appointments.

THE Honourable Sir Norman Kater and Professor H. A. Woodruff have been appointed members of the State Committees of New South Wales and Victoria respectively of the Council for Scientific and Industrial Research.

Books Received.

"Old Age: Some Practical Points in Geriatrics", by Trevor H. Howell, M.R.C.P., Ed., Captain R.A.M.C.; 1944. London: H. K. Lewis and Company, Limited. 8½" x 5½", pp. 54. Price: 4s. 6d. net.

"The Moonlit Doorway: Poems", by Kenneth Mackenzie; 1944. Sydney: Angus and Robertson Limited. 7½" x 4½", pp. 95. Price: 5s.

"The Fire on the Snow and the Golden Lover: Two Plays for Radio", by Douglas Stewart; 1944. Sydney: Angus and Robertson Limited. 7½" x 5", pp. 146. Price: 5s.

"Spright and Geist", by R.G.H.; 1944. Sydney: Angus and Robertson Limited. 7½" x 4½", pp. 20. Price: 2s. 6d.

"Australian Poetry, 1943", selected by H. M. Green; 1944. Sydney: Angus and Robertson Limited. 7½" x 4½", pp. 63. Price: 3s. 6d.

"The Urinary Tract: A Handbook of Roentgen Diagnosis", by H. Dabney Kerr, M.D., and Carl L. Gillies, M.D.; 1944. Chicago: The Year Book Publishers, Incorporated. 8" x 5½", pp. 320, with many illustrations. Price: \$5.50.

"Lectures on Preventive Medicine", by Harvey Sutton, O.B.E. (Mil.), Lieutenant-Colonel, A.A.M.C. Reserve, M.D., D.P.H. (Melbourne), B.Sc. (Oxon.), F. Roy. San. Inst., F.R.A.C.P.; 1944. Sydney: Consolidated Press Limited. 8½" x 5½", pp. 676, with illustrations. Price: 27s. 6d.

Diary for the Month.

FEB. 2.—Queensland Branch, B.M.A.: Branch Meeting.
 FEB. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 FEB. 6.—New South Wales Branch, B.M.A.: Special Groups Committee.
 FEB. 7.—Western Australian Branch, B.M.A.: Council Meeting.
 FEB. 9.—Queensland Branch, B.M.A.: Council Meeting.
 FEB. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 FEB. 20.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 FEB. 23.—Queensland Branch, B.M.A.: Council Meeting.
 FEB. 27.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmalm United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute; Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

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